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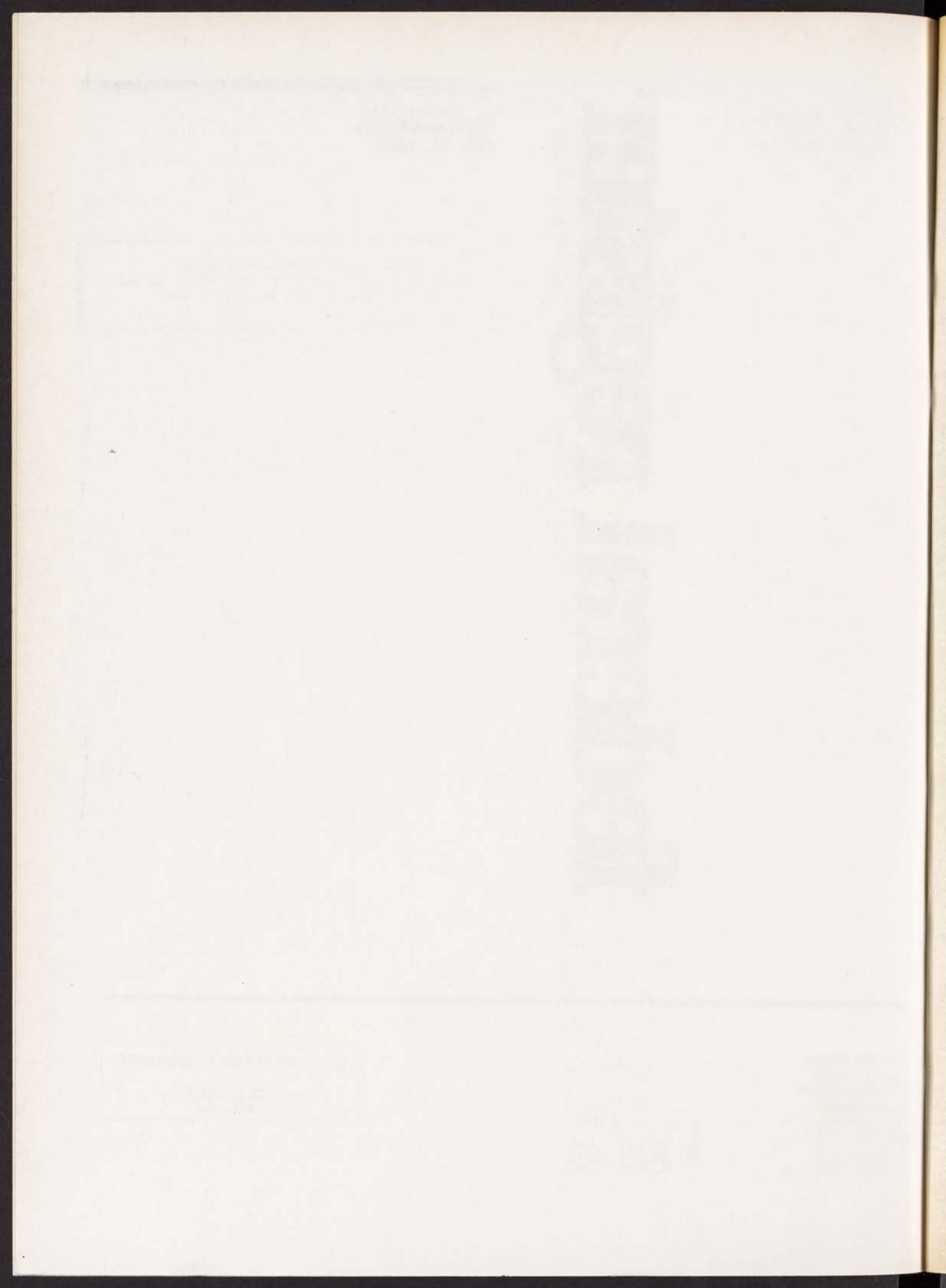
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FEDERAL REGISTER

Wednesday
July 17, 1991

Briefing on How To Use the Federal Register
For information on a briefing in New Orleans, LA, see
announcement on the inside cover of this issue.



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THE FEDERAL REGISTER

WHAT IT IS AND HOW TO USE IT

FOR:	Any person who uses the Federal Register and Code of Federal Regulations.
WHO:	The Office of the Federal Register .
WHAT:	Free public briefings (approximately 3 hours) to present: 1. The regulatory process, with a focus on the Federal Register system and the public's role in the development of regulations. 2. The relationship between the Federal Register and Code of Federal Regulations. 3. The important elements of typical Federal Register documents. 4. An introduction to the finding aids of the FR/CFR system.
WHY:	To provide the public with access to information necessary to research Federal agency regulations which directly affect them. There will be no discussion of specific agency regulations.

NEW ORLEANS, LA

WHEN:	July 23, at 9:00 am
WHERE:	Federal Building, 501 Magazine St., Conference Room 1120, New Orleans, LA
RESERVATIONS:	Federal Information Center 1-800-366-2998

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Pauline Davis
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Yvonne Taylor
Zoe Davis

Rules and Regulations

Federal Register

Vol. 56, No. 137

Wednesday, July 17, 1991

This section of the FEDERAL REGISTER contains regulatory documents having general applicability and legal effect, most of which are keyed to and codified in the Code of Federal Regulations, which is published under 50 titles pursuant to 44 U.S.C. 1510.

The Code of Federal Regulations is sold by the Superintendent of Documents. Prices of new books are listed in the first FEDERAL REGISTER issue of each week.

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Part 929

[Docket No. FV-91-263FR]

Cranberries Grown In the States of Massachusetts, Rhode Island, Connecticut, New Jersey, Wisconsin, Michigan, Minnesota, Oregon, Washington, and Long Island in the State of New York; Amendment of Rules and Regulations; Increase in Base Quantity Reserve

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Final rule.

SUMMARY: This final rule increases the base quantity reserve for the 1991-92 crop year from the required minimum of 2.0 percent to 2.89 percent of the total base quantities currently issued to cranberry producers, in order to update and expand base quantities for the benefit of producers. This action will help to facilitate the appropriate and equitable operation of the cranberry marketing order.

EFFECTIVE DATE: August 16, 1991.

FOR FURTHER INFORMATION CONTACT:

Patricia A. Petrella, Marketing Specialist, Marketing Order Administration Branch, F&V, AMS, USDA, Room 2525-S, PO Box 96456, Washington, DC 20090-6456; telephone: (202) 475-3920.

SUPPLEMENTARY INFORMATION: This final rule is issued under Marketing Order No. 929 (7 CFR part 929), as amended, regulating the handling of cranberries grown in 10 states. The order is effective under the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601-674), hereinafter referred to as the "Act."

This final rule has been reviewed by the U.S. Department of Agriculture

(Department) in accordance with Departmental Regulation 1512-1 and the criteria contained in Executive Order 12291 and has been determined to be a "non-major" rule.

Pursuant to requirements set forth in the Regulatory Flexibility Act (RFA), the Administrator of the Agricultural Marketing Service (AMS) has considered the economic impact of this rule on small entities.

The purpose of the RFA is to fit regulatory actions to the scale of business subject to such actions in order that small businesses will not be unduly or disproportionately burdened. Marketing orders issued pursuant to the Act, and rules issued thereunder, are unique in that they are brought about through group action of essentially small entities acting on their own behalf. Thus, both statutes have small entity orientation and compatibility.

There are approximately 30 handlers of cranberries subject to regulation under the cranberry marketing order and approximately 950 producers in the regulated area. Small agricultural producers have been defined by the Small Business Administration (13 CFR 121.2) as those having annual receipts for the last three years of less than \$500,000, and small agricultural service firms are defined as those whose annual receipts are less than \$3,500,000. The majority of handlers and producers of cranberries may be classified as small entities.

This final rule increases the reserve base quantity from the minimum 2.0 percent required by the order to 2.89 percent, in order to update and adjust producers' base quantities for the 1991-92 crop year. This action was unanimously recommended by the Cranberry Marketing Committee (Committee) at its March 6, 1991, meeting. The Committee is the agency responsible for local administration of the cranberry marketing order.

Each year prior to May 1, the Committee considers its marketing policy for the coming season and estimates a marketable quantity of cranberries. Such quantity is the amount of cranberries deemed necessary to meet the season's total market demand and provide for an adequate carryover of cranberries to the next season. If annual cranberry production is expected to exceed the desired marketable quantity, and, if the Secretary finds,

based on a recommendation of the Committee or from other available information, that limiting the quantity of cranberries that may be purchased or handled on behalf of producers would tend to effectuate the declared policy of the Act, the Secretary shall determine and establish the marketable quantity for that crop year. The marketable quantity is then apportioned among all eligible producers by applying an allotment percentage to each producer's base quantity pursuant to § 929.48 of the order. The allotment percentage is established by the Secretary and equals the marketable quantity divided by the total of all producers' base quantities.

Such base quantities are issued to producers: (a) Based on their sales during the period 1968-69 through 1973-74; (b) as a result of transfers of base quantities from other producers; or (c) as part of an annual reserve of at least 2 percent of the total base quantities. The reserve is used annually for the issuance of base quantities to new producers and adjustments in base quantities for existing producers, with 25 percent made available for new growers and 75 percent made available for adjustments for existing producers. Any unallocated portion of the 25 percent available to new producers may, at the discretion of the Committee, be prorated among eligible existing producers on an equitable basis.

On March 6, 1991, the Committee held its annual winter meeting to formulate its marketing policy for the 1991-92 crop year. They determined that implementation of § 929.49 (the establishment of a marketable quantity and annual allotment) was not warranted. However, Committee members noted that cranberry production, as in recent years, was projected to exceed the total of all current producers' allotment bases. Therefore, they recommended that additional base be issued to all qualified new and existing producers to the full amount to which each producer requested, contingent on each producer's demonstrated ability to produce and sell cranberries. The increase will make additional base quantity available to new and existing producers by increasing the 2.0 percent minimum base quantity reserve, as currently provided, the 2.89 percent. This action will also aid in the updating of base quantities, which will be

necessary for any future establishment of a marketable quantity and annual allotment.

The impact of this regulation on producers and handlers will not be significant because the change represents a relaxation of restrictions by increasing the total amount of base quantity available to producers. The amount of base quantity that will be issued represents the total amount of base quantity requested by qualified new and existing producers for the 1991-92 crop year. The Committee intends to distribute base quantity reserve to approximately 16 new producers and 251 existing producers.

A proposed rule on this action was published in the *Federal Register* on April 18, 1991 (56 FR 15845). Comments on the proposed rule were invited from interested persons until May 20, 1991. No comments were received.

After consideration of all relevant matter presented, including the Committee's recommendation and other available information, it is found that the changes hereinafter set forth will tend to effectuate the declared policy of the Act.

Based on the available information, the Administrator of the AMS has determined that issuance of this final rule will not have a significant economic impact on a substantial number of small entities.

List of subjects in 7 CFR Part 929

Cranberries, Marketing agreements, Reporting and recordkeeping requirements.

For the reasons set forth in the preamble, 7 CFR part 929 is amended as follows:

PART 929—CRANBERRIES GROWN IN THE STATES OF MASSACHUSETTS, RHODE ISLAND, CONNECTICUT, NEW JERSEY, WISCONSIN, MICHIGAN, MINNESOTA, OREGON, WASHINGTON, AND LONG ISLAND IN THE STATE OF NEW YORK

1. The authority citation for 7 CFR part 929 continues to read as follows:

Authority: Secs. 1-19, 48 Stat. 31, as amended; 7 U.S.C. 601-674.

2. Section 929.153 is amended by revising paragraph (a) to read as follows:

Subpart—Rules and Regulations

§ 929.153 Base quantity reserve.

(a) *Establishment.* An annual reserve base quantity equal to 2 percent of total base quantities is hereby established: *Provided*, That, for the 1991-92 crop

year, the reserve base quantity shall be 2.89 percent.

* * * * *

Dated: July 11, 1991.

William J. Doyle,

Acting Deputy Director, Fruit and Vegetable Division.

[FR Doc. 91-17031 Filed 7-16-91; 8:45 am]

BILLING CODE 3410-02-7

DEPARTMENT OF JUSTICE

Immigration and Naturalization Service

8 CFR Parts 103, 240

[INS No. 1443-91; AG ORDER No. 1511-91]

Waiver of Fees; Temporary Protected States

AGENCY: Immigration and Naturalization Service, Justice.

ACTION: Interim rule with request for comments.

SUMMARY: This interim rule adds a new § 240.48 to 8 CFR part 240 to provide procedures to request waivers of fees for applications for Temporary Protected Status (TPS) filed with district directors and service center directors. This rule is necessary to provide guidance on the information required from an applicant to establish an inability to pay and will standardize the documentation which may be requested by adjudicating officers in making a determination on fee waiver requests for TPS. This interim rule will also amend § 103.7 of 8 CFR part 103 to reflect that waivers of fees for applications for Temporary Protected Status may be granted pursuant to 8 CFR 240.48.

DATES: This interim rule is effective July 17, 1991. Written comments must be submitted on or before August 16, 1991.

FOR FURTHER INFORMATION CONTACT: Terrance O'Reilly, TPS Coordinator, Immigration and Naturalization Service, 425 I Street, NW., room 7122, Washington, DC 20536, telephone number (202) 514-5309.

SUPPLEMENTARY INFORMATION:

Background

On January 7, 1991, the Immigration and Naturalization Service ("the Service" or "INS") published interim regulations implementing the Temporary Protected Status (TPS) Program for Salvadorans, providing for an initial registration fee of \$75 per applicant and a \$75 re-registration fee. 56 FR 618. An additional fee of \$35 per applicant was required for work authorization. An amendment to 8 CFR 103.7 (b)(1),

published in the *Federal Register* on March 27, 1991 and effective on April 11, 1991, increased the fee for employment authorization to \$60. 56 FR 12647. After reviewing comments in response to the interim regulation, the final TPS rule was published in the *Federal Register* on May 22, 1991 at 56 FR 23491. The final rule set a maximum registration fee for families of \$225, and eliminated the registration fees due to a reassessment and reduction in the potential size of the program. These fees were determined by the Service to be necessary and sufficient to pay for the administration of the TPS program as mandated by statute.

If a TPS applicant is unable to pay the prescribed fee, the final rule made fee waivers available pursuant to 8 CFR 103.7(c). On April 4, 1991, the INS Commissioner issued guidelines on fee waiver adjudications, instructing Service officers to use the Public Welfare, Poverty Guidelines in 45 CFR part 1060.2 as a criterion when adjudicating fee waiver requests. In the Supplementary Information to the TPS final rule, the Service expressed its intent to measure inability to pay using the Public Welfare, Poverty Guidelines as a criterion.

On June 3, 1991, the United States District Court for the Eastern District of California, in *Cortez v. Thornburgh*, Civ. No. S-91-565-DFL (E.D. Cal.) certified a class consisting of all Salvadoran nationals present in the United States since September 19, 1990, who seek to apply, have applied, or will apply for TPS pursuant to section 303 of the Immigration Act of 1990 at any INS office within the INS San Francisco District and whose income falls below the Public Welfare, Poverty Guidelines. The district court entered a preliminary injunction enjoining INS from denying the fee waiver requests of class members who meet the regulatory requirements of 8 CFR 103.7(c) by substantiating an incomes below the Public Welfare, Poverty Guidelines. The June 12, 1991 order of the district court extended the preliminary injunction to the INS Los Angeles District.

Plaintiffs submitted in evidence sworn declarations reflecting that between 60 and 80 percent of all Salvadoran nationals in the United States have income below the Public Welfare, Poverty Guidelines. Based upon this estimate, INS concluded that if the Public Welfare, Poverty Guidelines are used as the single criterion to grant fee waivers, the registration fee required from the remaining 20 to 40 percent of the Salvadoran nationals will not cover the program's administrative costs as

mandated by section 303(b)(2) of the Immigration Act of 1990.

Therefore, the amendment to 8 CFR part 240 set forth in this regulation revises the current standard for the adjudication of fee waiver applications to require a determination whether the applicant's gross income exceeds his or her essential expenditures. An applicant whose income during the three months immediately prior to the application was exceeded by his or her essential expenditures will be granted a fee waiver unless he or she has assets from which to pay the fee without substantial hardship.

Summary of the Regulation

The amendment to 8 CFR part 240 specifies the standards to be applied and the necessary information to be contained in an applicant's affidavit to establish his or her inability to pay the required TPS fee. The applicant has the burden of proof in establishing his or her inability to pay. The adjudicating officer has discretion to decide whether that burden has been met. Even if the applicant declares that his or her gross income for the three months prior to the fee waiver request is less than his or her essential expenditures for such period, and that he or she does not have sufficient assets from which to pay the fee, the adjudicating officer may request additional information if he or she is not satisfied about the accuracy of the information or if the income or essential expenditures have not been adequately detailed. Fees for other applications, petitions, appeals, motions, or requests may be waived pursuant to the provisions of 8 CFR 103.7(c). Fee waiver requests addressed to immigration judges, or to the Board of Immigration Appeals, are considered under 8 CFR part 3.

Justification for Interim Rule

This rule is effective immediately. The Service's implementation of this rule as an interim rule, with provision for post-promulgation public comment, is based upon the "good cause" exception found at 5 U.S.C. 553(d). In light of the evidence submitted in *Cortez v. Thornburgh*, *supra*, and the preliminary injunction issued in that case, the statutory mandate for the Salvadoran TPS Program requiring a registration fee sufficient to make that program self-supporting, and a termination date of June 30, 1991 for the initial registration phase of that program, the Attorney General has determined that it is necessary to immediately implement this interim rule amending regulations involving fee waivers for the TPS program.

In accordance with 5 U.S.C. 605(b), the Attorney General certifies that this rule will not have a significant adverse economic impact on a substantial number of small entities. This rule is not considered to be a major rule within the meaning of section 1(b) of E.O. 12291, nor does this rule have Federalism implications warranting the preparation of a Federalism Assessment in accordance with E.O. 12612.

List of Subjects

8 CFR Part 103

Administrative practice and procedure, Aliens, Authority delegations (Government agencies), Freedom of information, Privacy, Reporting and recordkeeping requirements, Surety bonds.

8 CFR Part 240

Administrative practice and procedure, Immigration.

Accordingly, parts 103 and 240 of title 8 of the Code of Federal Regulations are amended as follows:

PART 103—POWERS AND DUTIES OF SERVICE OFFICERS; AVAILABILITY OF SERVICE RECORDS

1. The authority citation for part 103 continues to read as follows:

Authority: 5 U.S.C. 552a; 8 U.S.C. 1101, 1103, 1201, 1304; 31 U.S.C. 9701; E.O. 12356, 47 FR 14874, 15557, 3 CFR, 1982 Comp., p. 166; 8 CFR part 2.

2. Section 103.7 is amended by adding a new paragraph (c)(4) to read as follows:

§ 103.7 Fees.

* * * * *

(c)

* * * * *

(4) Fees for applications for Temporary Protected Status may be waived pursuant to 8 CFR 240.48.

PART 240—TEMPORARY PROTECTED STATUS FOR NATIONALS OF DESIGNATED STATES

3. The authority citation for part 240 continues to read as follows:

Authority: 8 U.S.C. 1103, 1254a, 1254a note.

2. Section 240.48 is added to read as follows:

§ 240.48 Waiver of Fees.

(a) Any of the fees prescribed in 8 CFR 103.7(b) which relate to applications to the district director or service center director for Temporary Protected Status may be waived if the applicant establishes that he or she is unable to pay the prescribed fee. The applicant will have established his or

her inability to pay when the adjudicating officer concludes, on the basis of the requisite affidavit and of any other information submitted, that it is more probable than not that:

(1) The applicant's gross income from all sources for the three month period prior to the fee waiver request, including income received or earned by any dependent in the United States, was equaled or exceeded by essential expenditures for such three month period; and

(2) The applicant does not own, possess, or control assets sufficient to indicate that the applicant can pay the fee without substantial hardship.

(b) For purposes of this section, essential expenditures are limited to reasonable expenditures for rent, utilities, food, transportation to and from employment, and any essential extraordinary expenditures, such as essential medical expenses, incurred during the three month period prior to the filing of the fee waiver request.

(c) Documentation.

(1) The applicant seeking a fee waiver must submit an affidavit, under penalty of perjury, setting forth information to establish that he or she satisfies the requirements of this section. The affidavit shall individually list:

(i) The applicant's monthly gross income from each source for each of the three months prior to the fee waiver request;

(ii) All assets owned, possessed, or controlled by the applicant or by his or her dependents;

(iii) The applicant's essential monthly expenditures from each source for each of the three months prior to filing the fee waiver request, including essential extraordinary expenditures, such as essential medical expenses; and

(iv) The applicant's dependents in the United States, his or her relationship to those dependents, the dependents' ages, any income earned or received by those dependents, and the street address of each dependent's place of residence.

(2) The applicant may also submit other documentation tending to substantiate his or her inability to pay.

(d) If the adjudicating officer concludes based upon the totality of the circumstances that the information presented in the affidavit and in any other additional documentation is inaccurate or insufficient, the adjudicating officer may require that the applicant submit the following additional documents prior to the adjudication of a fee waiver:

(1) The applicant's employment records, pay stubs, W-2 forms, letter(s) from employer(s), and proof of filing of a local, state, or federal income tax return.

The same documents may also be required from the applicant's dependents in the United States.

(2) The applicant's rent receipts, bills for essential utilities (for example, gas, electricity, telephone, water), food, medical expenses, and receipts for other essential extraordinary expenditures, to establish average monthly expenditures.

(3) Documentation to show all assets owned, possessed, or controlled by the applicant or by dependents of the applicant.

(4) Evidence of the applicant's living arrangements in the United States (living with relative, living in his or her own house or apartment, etc), and evidence of whether his or her spouse, children, or other dependents are residing in his or her household in the United States.

(5) Evidence of the applicant's essential extraordinary expenditures or those of his or her dependents residing in the United States (e.g., medical records).

(e) The adjudicating officer must consider the totality of the information submitted in each case before requiring additional information or rendering a final decision.

(f) All documents submitted by the applicant or required by the adjudicating officer in support of a fee waiver request are subject to verification by the Service.

(g) In requiring additional information, the adjudicating officer should consider that some applicants may have little or no documentation to substantiate their claims. An adjudicating officer may accept other evidence, such as an affidavit from a member of the community of good moral character, but only if the applicant provides an affidavit stating that more direct documentary evidence is unavailable.

Dated: July 8, 1991.

Dick Thornburgh,

Attorney General.

[FR Doc. 91-16939 Filed 7-16-91; 8:45 am]

BILLING CODE 4410-10-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 97

[Docket No. 26596; Amdt. No. 1456]

Standard Instrument Approach Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs) for operations at certain airports. These regulatory actions are needed because of the adoption of new or revised criteria, or because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, addition of new obstacles, or changes in air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: Effective: An effective date for each SIAP is specified in the amendatory provisions.

Incorporation by reference—approved by the Director of the Federal Register on December 31, 1980, and reapproved as of January 1, 1982.

ADDRESSES: Availability of matters incorporated by reference in the amendment is as follows:

For Examination—

1. FAA Rules Docket, FAA Headquarters Building, 800 Independence Avenue SW., Washington, DC 20591;
2. The FAA Regional Office of the region in which the affected airport is located; or
3. The Flight Inspection Field Office which originated the SIAP.

For Purchase—

Individual SIAP copies may be obtained from:

1. FAA Public Inquiry Center (APA-200), FAA Headquarters Building, 800 Independence Avenue SW., Washington, D.C. 20591; or
2. The FAA Regional Office of the region in which the affected airport is located.

By Subscription—

Copies of all SIAPs, mailed once every 2 weeks, are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

FOR FURTHER INFORMATION CONTACT:

Paul J. Best, Flight Procedures Standards Branch (AFS-420), Technical Programs Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 267-8277.

SUPPLEMENTARY INFORMATION: This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or

revokes Standard Instrument Approach Procedures (SIAPs). The complete regulatory description of each SIAP is contained in official FAA form documents which are incorporated by reference in this amendment under 5 U.S.C. 552(a), 1 CFR part 51, and § 97.20 of the Federal Aviation Regulations (FAR). The applicable FAA Forms are identified as FAA Forms 8260-3, 8260-4, and 8260-5. Materials incorporated by reference are available for examination or purchase as stated above.

The large number of SIAPs, their complex nature, and the need for a special format make their verbatim publication in the *Federal Register* expensive and impractical. Further, airmen do not use the regulatory text of the SIAPs, but refer to their graphic depiction on charts printed by publishers of aeronautical materials. Thus, the advantages of incorporation by reference are realized and publication of the complete description of each SIAP contained in FAA form documents is unnecessary. The provisions of this amendment state the affected CFR (and FAR) sections, with the types and effective dates of the SIAPs. This amendment also identifies the airport, its location, the procedure identification and the amendment number.

This amendment to part 97 is effective on the date of publication and contains separate SIAPs which have compliance dates stated as effective dates based on related changes in the National Airspace System or the application of new or revised criteria. Some SIAP amendments may have been previously issued by the FAA in a National Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts. The circumstances which created the need for some SIAP amendments may require making them effective in less than 30 days. For the remaining SIAPs, an effective date at least 30 days after publication is provided.

Further, the SIAPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Approach Procedures (TERPs). In developing these SIAPs, the TERPs criteria were applied to the conditions existing or anticipated at the affected airports. Because of the close and immediate relationship between these SIAPs and safety in air commerce, I find that notice and public procedure before adopting these SIAPs are unnecessary, impracticable, and contrary to the public interest and, where applicable, that good cause exists

for making some SIAPs effective in less than 30 days.

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore—(1) is not a "major rule under Executive Order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. For the same reason, the FAA certifies that this amendment will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 97

Approaches, Standard instrument, Incorporation by reference.Q04

Issued in Washington, DC on July 5, 1991.

Thomas C. Accardi,
Director, Flight Standards Service.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me, part 97 of the Federal Aviation Regulations (14 CFR part 97) is amended by establishing, amending, suspending, or revoking Standard Instrument Approach Procedures, effective at 0901 g.m.t. on the dates specified, as follows:

PART 97—[AMENDED]

1. The authority citation for part 97 continues to read as follows:

Authority: 49 U.S.C. 1348, 1354(a), 1421 and 1510; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983); and 14 CFR 11.49(b)(2).

2. Part 97 is amended to read as follows:

§§ 97.23, 97.25, 97.27, 97.29, 97.31, 97.33, 97.35 [Amended]

By amending: § 97.23 VOR, VOR/DME, VOR or TACAN, and VOR/DME or TACAN; § 97.25 LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME; § 97.27 NDB, NDB/DME; § 97.29 ILS, ILS/DME, ISMLS, MLS, MLS/DME, MLS/RNAV; § 97.31 RADAR SIAPs; § 97.33 RNAV SIAPs; and § 97.35 COPTER SIAPs, identified as follows:

* * * September 19, 1991

Blytheville, AR—Blytheville Muni, RADAR-1, Orig., CANCELED
Fairfield, IA—Fairfield Muni, NDB RWY 36, Amdt. 7
Fairfield, IA—Fairfield Muni, VOR/DME RNAV RWY 18, Amdt. 1
Fairfield, IA—Fairfield Muni, VOR/DME RNAV RWY 36, Amdt. 1
Henderson, KY—Henderson-City County, VOR-A, Amdt. 9

Kansas City, MO—Kansas City Intl, VOR RWY 27, Amdt. 13
Kansas City, MO—Kansas City Intl, LOC BC RWY 27, Amdt. 11
Kansas City, MO—Kansas City Intl, NDB RWY 1, Amdt. 14
Kansas City, MO—Kansas City Intl, NDB RWY 9, Amdt. 8
Kansas City, MO—Kansas City Intl, ILS RWY 1, Amdt. 11
Kansas City, MO—Kansas City Intl, ILS RWY 9, Amdt. 11
Kansas City, MO—Kansas City Intl, ILS RWY 19, Amdt. 7
New York, NY—John F. Kennedy Intl, MLS C/P RWY 13R, Orig.
Elizabethtown, NC—Elizabethtown, VOR/DME RWY 15, Orig.
Elizabethtown, NC—Elizabethtown, NDB RWY 33, Orig.
Kinston, NC—Kinston Regional Jetport at Stallings Fld, VOR/DME RWY 5, Amdt. 12
Kinston, NC—Kinston Regional Jetport at Stallings Fld, VOR RWY 23, Amdt. 12
Kinston, NC—Kinston Regional Jetport at Stallings Fld, NDB RWY 5, Amdt. 10
Kinston, NC—Kinston Regional Jetport at Stallings Fld, ILS RWY 5, Amdt. 9
Afton, OK—Shangri-LA—VOR/DME-A, AMDT. 1, CANCELED
Afton, OK—Shangri-LA—NDB RWY 35, AMDT. 3, CANCELED
Afton, OK—Shangri-LA—RNAV RWY 17, AMDT. 1, CANCELED
Afton, OK—Shangri-LA—RNAV RWY 35, AMDT. 1, CANCELED

* * * Effective August 22, 1991

Monett, MO—Monett Muni, VOR/DME-A, Orig.
Oklahoma City, OK—Clarence E Page Muni, VOR-B, Amdt. 1
Oklahoma City, OK—Clarence E Page Muni, VOR/DME RNAV RWY 17R, Amdt. 1
Oklahoma City, OK—Clarence E Page Muni, VOR/DME RNAV RWY 35L, Amdt. 1
Harlingen, TX—Rio Grande Valley Intl, VOR/DME RWY 31, Amdt. 3
Harlingen, TX—Rio Grande Valley Intl, LOC BC RWY 35L, Amdt. 12
Harlingen, TX—Rio Grande Valley Intl, NDB RWY 17L, Amdt. 5
Harlingen, TX—Rio Grande Valley Intl, NDB RWY 17R, Amdt. 11
Harlingen, TX—Rio Grande Valley Intl, ILS RWY 17R, Amdt. 11

* * * Effective July 1, 1991

San Diego (El Cajon), CA—Gillespie Field, LOC-D Amdt. 7

* * * Effective June 21, 1991

Cut Bank, MT—Cut Bank Muni, VOR RWY 31, Amdt. 14

* * * Effective June 19, 1991

Monroe, MI—Custer, VOR-B, Amdt. 1.

[FR Doc. 91-16987 Filed 7-16-91; 8:45 am]

BILLING CODE 4910-13-M

DEPARTMENT OF STATE

Bureau of Consular Affairs

22 CFR Part 45

[Public Notice 1425]

Visas: Documentation of Immigrants Under Section 124 of Public Law 101-649

ACTION: Final rule.

SUMMARY: This rule promulgates final regulations to establish a new part 45 of title 22 to implement the provisions of section 124 of Public Law 101-649 and of section 154 of Public Law 101-649, insofar as it relates specifically to aliens within the purview of section 124. A Notice of Proposed Rule Making on this subject was published on January 30, 1991. The comment period ended on March 1, 1991. Section 124 authorizes the issuance of up to 12,000 immigrant visas annually during fiscal years 1991, 1992, and 1993 to aliens who are beneficiaries of petitions approved for this purpose by the Immigration and Naturalization Service. Section 154 authorizes extending the validity of immigrant visas issued to certain immigrant aliens, including those within the purview of section 124, for a specified period. This final rule contains certain changes, described in detail below, resulting from an analysis of the comments received during the comment period.

EFFECTIVE DATE: August 16, 1991.

FOR FURTHER INFORMATION CONTACT:

Cornelius D. Scully, III, Director, Office of Legislation, Regulations, and Advisory Assistance, Visa Office, Department of State, Washington, DC, 20522-0113; (202) 663-1184.

SUPPLEMENTARY INFORMATION: During the comment period, the Department received three comments. Each commenter addressed different aspects of the proposed rule.

Discussion of comments

One commenter began by pointing out that, as a technical matter, the description in the Supplementary Information of the class of aliens entitled to benefit from the provisions of section 124 is inaccurate in that it fails to recite with specificity the classes as enumerated in the text of section 124. The Department acknowledges the inaccuracy, which resulted from defective draftsmanship, not from any intent to interpret section 124 in this respect in a manner at variance with its explicit terms. In any event, the determination whether an alien is within

the purview of section 124 will be made by the Immigration and Naturalization Service in the adjudication of the petitions required pursuant to that section.

This same commenter raised a substantive issue about the proposed regulations and those contained in the Notice of Proposed Rule Making concerning section 154 of Public Law 101-649, which authorizes the issuance of immigrant visas having an extended period of validity to certain immigrants, including those within the purview of section 124. After careful study of, and reflection upon, the comment, the Department has concluded that a change in the provisions implementing the extended validity provision is necessary.

Section 154 of Public Law 101-649

Since the matter is a complex one, it is described here in substantial detail. Section 154 of Public Law 101-649 authorizes a consular officer to extend the validity of an immigrant visa issued to a beneficiary alien to a period not later than January 1, 2002, in certain cases. This benefit is available to natives of Hong Kong who are classifiable as relative or family-based preference immigrants and, beginning in FY 92, as priority workers (the first employment-based preference). In addition, it is also available to aliens within the purview of section 124—specified classes of employees of U.S. business entities in Hong Kong.

In all these cases, the apparent purpose of the extended visa validity provision is to provide to natives and residents of Hong Kong an assurance that they need not depart Hong Kong precipitately in fear that they may be prejudiced by the transfer of sovereignty from the United Kingdom to the People's Republic of China in 1997. In the case of aliens within the purview of section 124 there appears to have been an additional factor—to allow U.S. business entities having operations in Hong Kong to retain valued employees necessary to the continuation of those operations.

Section 154(a)(1)(A) permits an alien entitled to have the validity of his or her visa extended at their request either at the time of visa issuance or within four months thereafter. Section 154(a)(1)(B) specifies that an alien who has chosen to have the validity of his or her visa extended must submit to a redetermination of admissibility prior to actual travel to the United States. The Department proposed to interpret this provision as requiring the redetermination of admissibility only if the proposed travel would occur later

than four months from the date of visa issuance, even though section 154(a)(1)(B) does not expressly so state. It is this interpretation, insofar as it relates to aliens within the purview of section 124, to which this commenter's remarks were addressed.

Section 134 Public Law 101-649

This issue affects, and is affected by, section 124(a)(3)(B). This section requires that, in order to benefit from section 124, an alien must have "an offer of employment from such business entity in the United States as an officer, or supervisor or in a capacity that is managerial, executive, or involves specialized knowledge, which offer [i] is effective from the time of filing the petition for classification under this section through and including the time of entry into the United States and [ii] provides for salary and benefits comparable to the salary and benefits provided to others with similar responsibilities and experience within the same company."

On its face, section 124(a)(3)(B) could require a specific offer of employment, with all the detail of the position, including salary and benefits, in every case, including those in which the petitioning entity envisioned that the alien would not actually immigrate to the United States for a number of years. The legislative history—House Report 101-723, at p. 74—indicates, however, that the Congress recognized that a petitioning entity could not realistically be required to predict in 1991, for example, to which specific position a particular employee might be assigned in, say, 1996, or what the level of salary and benefits of similarly situated employees might be at that time. The Report states "[a] United States employer must provide a qualifying job offer at the time the initial petition is filed. However, the Committee does not intend that the employer hold a specific position open and available during the entire interval between filing and [the] alien employee's eventual arrival in the United States. Rather, it is the intent of the Committee that the employer only be required to have a qualifying job available at the time the alien employee enters the United States as an immigrant."

The Immigration and Naturalization Service has responded to this statement by establishing alternative requirements for documentation in support of petitions to classify an alien under section 124.

If the petitioning entity envisions that the alien beneficiary will immigrate immediately—within the normal visa validity period of four months—the

petitioning entity must submit a specific job offer with all the normally required details. If, on the other hand, the petitioning entity envisions that the alien beneficiary will defer immigration for some time—beyond the normal four-month visa validity period—the entity need submit only a general assurance that a job meeting the requirements of section 124 will be made available for the beneficiary at such time as the beneficiary is to travel to the United States.

The commenter has pointed out that the Department's proposed rules for redetermination of admissibility do not fit with the position taken by the Service in its instructions concerning the documentation to be submitted in support of petitions to accord classification under section 124. The commenter notes that, under the rule as proposed, an alien whose petition was supported only by the general assurance letter could decide, without the knowledge and consent of the petitioning entity, to immigrate within the initial four-month period following visa issuance. Such a decision would place the entity in an awkward position vis-a-vis the employee and would, in the Department's opinion, be in conflict with the intent of the Congress in enacting section 124 and allowing its beneficiaries to benefit from the extended visa validity provisions of section 154.

Changes to Notice of Proposed Rule

As a result of the comment, the Department is making a substantial change in the regulations implementing section 154, insofar as it relates to aliens within the purview of section 124. First, in a separate publication, the Department will make a change in its proposed regulations—22 CFR 42.72(e)—implementing section 154 to eliminate therefrom any reference to aliens within the purview of section 124. In its final form, new § 42.72(e) will provide only for the extended validity of immigrant visas issued to natives of Hong Kong classified as relative preference, family-based preference, or priority worker immigrants. Second, proposed §§ 45.4 and 45.5 will be amended to incorporate therein all provisions implementing the extended validity of immigrant visas insofar as it relates to aliens within the purview of section 124.

Moreover, the rules applicable with respect to the extension of visa validity and the requirement for a redetermination of admissibility will be changed to take into account the point raised by the commenter. Under the final rule, an alien beneficiary of a

petition to accord status under section 124 who is issued an immigrant visa on the basis of the approved petition will be subject to the following requirements:

(1) If the approved petition was supported by a general letter of assurance reflecting that the petitioner envisioned deferred immigration, the visa issued to the petition beneficiary will be subject to a redetermination of admissibility whenever he or she decides to travel to the United States, whether within four months of the date of visa issuance or at some later time;

(2) When an immigrant visa which was issued on the basis of a petition supported by such a general letter of assurance is submitted for a redetermination of admissibility, the visa may be endorsed to reflect admissibility only if the beneficiary submits a specific offer of employment from the petitioning entity which includes the job title, a description of job duties, and details of the remuneration (salary and benefits) offered to the beneficiary.

Similarly, alien beneficiaries whose approved petitions are based upon a specific offer of employment will be subject to certain rules. The submission of a specific offer of employment by the petitioner clearly reflects the petitioner's expectation that the alien beneficiary will travel to the United States promptly following visa issuance—that is, within the normal four-month period of visa validity.

Thus, in the ordinary course of things, such an alien would not request extended visa validity and no further action would be required with respect to the alien's immigrant visa. On the other hand, a request by such an alien that the validity of his or her immigrant visa be extended would just as clearly raise a question about the validity of the specific offer of employment submitted with the underlying approved visa petition. Thus, in such a case, while the alien will not be required to obtain a redetermination of admissibility for travel during the initial four-month period, he or she will be required to do so for travel at any time thereafter.

A second commenter addressed three entirely different issues which were—(1) The question whether the 12,000 per annum limitation provided in section 124 applies only to petition beneficiaries, but not to spouses and children of petition beneficiaries, or to both petition beneficiaries and their spouses and children; (2) whether the redetermination of admissibility should deal with any issue other than admissibility under section 212(a); and (3) whether the proposed requirement that an alien within the purview of

section 124 must be employed in a qualifying position throughout the period between immigrant visa issuance and actual application for admission for permanent residence.

With respect to the first issue—whether spouses and children of petition beneficiaries are subject to the 12,000 limitation specified in section 124—the Department concedes that the language of section 124 itself is susceptible of being read to limit the applicability of the 12,000 limitation to petition beneficiaries only. The Department does not, however, believe that the language compels such a reading. It is thus necessary to adopt one or the other reading.

In this connection, the Department has examined both the final version of Public Law 101-649 and the Senate and House versions which were the subject of the conference which resulted in the enacted version. In the House version, there were several provisions in which the numerical limitation applied only to principal aliens (petition beneficiaries). The Committee of Conference which reconciled the differing versions approved by the two houses of Congress eliminated those provisions. It is thus clear to the Department that the intent of the Congress was to subject all aliens other than Immediate Relatives to a numerical limitation on immigration and does not believe that an interpretation to the contrary here is supportable. Accordingly, the Department will not adopt the position urged by the commenter in this respect.

The same commenter asserted that, in enacting the extended visa validity provision—section 154—the Congress intended the greatest possible guarantee for the visa recipients. On this basis, the commenter asserted that the subsequent redetermination of admissibility required prior to actual travel should be confined only to a determination whether the alien had become inadmissible under the grounds of exclusion set forth in section 212(a) of the INA, without regard to other possible aspects of admissibility. Insofar as this comment relates to aliens within the purview of section 124, this position is altogether untenable since the Congress dealt in detail with the requirements for ultimate admission of such an alien.

With respect to the commenter's third point—that a beneficiary alien should not be required to continue in a qualifying position throughout the interim period between visa issuance and actual application for admission for permanent residence—the Department finds the comment illogical. It is true that the statute does not, on its face,

impose such a requirement. On the other hand, there is an explicit requirement that the alien occupy a qualifying position at the time of petition filing and adjudication and that he or she also be destined to a qualifying position at the time of actual travel to the United States. It thus appears to the Department both logical and consistent with the intent of the Congress to require that the alien continue to be employed at a qualifying level during the interim period.

The third commenter stated that the extended visa validity provision should be applied not merely to aliens employed by a petitioning entity but also to aliens employed by an entity under common control with the petitioning entity. The import of the comment was not entirely clear to the Department, but it seems to relate to the question of which corporate relationships are within the contemplation of section 124 and which are not.

The Department takes no independent position on this issue. The responsibility for adjudicating petitions filed to accord status under section 124 clearly lies with the Immigration and Naturalization Service. Whatever corporate relationships will support the initial approval of a petition to accord status under section 124 will support a determination of admissibility when a visa recipient who has exercised the extended validity option seeks such a redetermination. A corporate relationship which would not have supported an initial approval of such a petition will not support a determination of admissibility at the later stage.

Finally, during the comment period, internal discussions within the Department and with the United States Consulate General at Hong Kong have resulted in certain changes which are also reflected in the Final Rule. First immigrant visas issued with the extended validity will be endorsed at the time of issuance "section 154 applies." This will signify to not only the visa recipient but also to INS port of entry inspection personnel that the alien in question is subject to the requirement for a redetermination of admissibility by a consular officer prior to travel to the United States. Placing the endorsement on the face of the issued visa itself will give clearer notice to all concerned of the applicability of this requirement than the originally proposed requirement that the alien be informed of the requirement at the time of visa interview. The consular officer will still inform the alien of the requirement but will now also place the prescribed

endorsement on the face of the visa as well.

Second, the Department has reconsidered the proposed procedure under which a consular officer would signify that the required redetermination of admissibility has been carried out merely by endorsing the original immigrant visa. The Department has concluded that, upon making the necessary redetermination, the consular officer will instead issue a new immigrant visa to the alien, marking the visa on its face as a Duplicate Immigrant Visa. This new requirement is reflected in new paragraph 45.6.

The decision to adopt this procedure was based on two considerations. First, and most significant, concern was expressed, both within the Department itself and by the Consulate General that a mere handwritten or stamped endorsement on the face of the original immigrant visa could be imitated and fraudulently entered on the face of a visa. Adoption of the procedure described above eliminates that possibility. Also, new § 45.6, which is modelled upon existing § 42.74(c), will allow for the collection of an appropriate fee in connection with the redetermination of admissibility.

This rule is not considered to be a major rule for the purposes of Executive Order 12291 nor is it expected to have significant impact on a substantial number of small entities under the Regulatory Flexibility Act. This final rule imposes no reporting or record-keeping action from the public requiring the approval of the Office of Management and Budget under the Paperwork Reduction Act requirements.

List of Subjects in 22 CFR Part 45

Aliens, Duplicate visas, Immigrants.

In view of the foregoing, title 22, Code of Federal Regulations, is amended by adding part 45 to chapter I, subchapter E—Visas, to read:

PART 45—VISAS: DOCUMENTATION OF IMMIGRANTS UNDER SECTION 124 OF PUBLIC LAW 101-649

Sec.

- 45.1 General.
- 45.2 Priority date of applicants.
- 45.3 Control of numerical limitations.
- 45.4 Period of validity of immigrant visas.
- 45.5 Redetermination of admissibility if visa validity extended.
- 45.6 Issuance of immigrant visa upon redetermination of admissibility.

Authority: 8 U.S.C. 1104; 8 U.S.C. 1153 Note.

§ 45.1 General.

Except as specifically provided in this part, the provisions of the INA, as amended, and of parts 40 and 42 of this

chapter shall apply to application for, consideration of, and issuance or refusal of, immigrant visas under section 124 of Public Law 101-649.

§ 45.2 Priority date of applicants.

The priority date of an alien who is the beneficiary of a petition approved by the Service to accord status under section 124 of Public Law 101-649 shall be the filing date of the approved petition, as determined by the Immigration and Naturalization Service. The priority date of the spouse or child, accompanying or following to join such an alien shall be the priority date of the alien spouse or parent.

§ 45.3 Control of numerical limitation.

(a) *Centralized control.* Centralized control of the numerical limitation specified in section 124 of Public Law 101-649 is established in the Department. In order to effect this control, the Department shall limit the number of immigrant visas and the number of adjustments of status that may be granted to aliens applying under section 124 of Public Law 101-649 to a number not to exceed 12,000 in any fiscal year and not to exceed in any month of a fiscal year 1,200 plus any balance remaining from authorizations for preceding months in the same fiscal year.

(b) *Allocation of immigrant visa numbers.* Within the numerical limitations specified in paragraph (a) of this section and based on the chronological order of priority dates of applicants as established pursuant to § 45.2 of this part, the Department shall allocate immigrant visa numbers for use in connection with the issuance of immigrant visas and the granting of adjustment of status to such aliens.

§ 45.4 Period of validity of immigrant visas.

The period of validity of an immigrant visa issued to an alien pursuant to the provisions of this part may, at the request of the applicant, be extended until January 1, 2002, if the applicant so requests either at the time of issuance of the visa or within four months thereafter. If the applicant fails to make such a request at the time of visa issuance but subsequently, within four months thereafter, makes such a request, the consular officer shall issue a replacement visa to the alien in accordance with the provisions of § 42.74(b) of part 42 of this title.

§ 45.5 Redetermination of admissibility if visa validity extended.

(a) An alien to whom an immigrant visa is issued pursuant to this part who

elects to have the validity of the visa extended as provided in § 45.4 shall have his or her admissibility redetermined prior to actual travel to the United States as follows:

(1) If the alien is the beneficiary of a petition to accord status under section 124 of Public Law 101-649 which was supported by a specific offer of employment from the petitioning entity, or is the spouse or child of such an alien, a redetermination of admissibility is required only if the anticipated date of actual application for admission for permanent residence is more than four months following the date of visa issuance;

(2) If the alien is the beneficiary of a petition to accord status under section 124 of Public Law 101-649 which was supported by a general assurance from the petitioning entity that an appropriate job would be made available to the alien upon entry, or is the spouse or child of such an alien, a redetermination of admissibility is required whenever the alien proposes to apply for admission for permanent residence, whether within four months of the date of visa issuance or later.

(b) When an alien to whom an immigrant visa is issued pursuant to this part elects to have the validity of the visa extended pursuant to paragraph (a) of this section, the consular officer shall notify the alien in writing of the requirement for a redetermination of admissibility as provided in paragraph (a) and shall endorse the visa "section 154 applies." Thereafter, the alien shall, not sooner than four months preceding the contemplated date of application for admission for permanent residence notify the appropriate consular officer of his or her intention to travel to the United States for this purpose. The consular officer shall thereupon schedule an appointment with such alien for the purpose of determining whether or not the alien remains admissible into the United States for permanent residence. If the consular officer determines that the alien continues to be so admissible, he or she shall issue to the alien a duplicate immigrant visa as provided in § 45.6 of this part. If the consular officer determines that the alien has become inadmissible to the United States, he or she shall revoke the visa as provided in § 42.82 of part 42 of this title.

(c) An alien who elects to have the period of validity of his or her immigrant visa extended pursuant to § 45.4 and whose entitlement to the immigrant classification of such visa was based

upon his or her status as a child at the time of visa issuance shall not cease to be entitled to such visa by reason of attaining age twenty-one or marrying prior to his or her application for admission for permanent residence.

(d) An alien who seeks a redetermination of admissibility pursuant to paragraph (a) of this section shall not be found to be admissible unless he or she:

(1) Has continued to be employed by the petitioning entity in a qualifying position since issuance of the visa and presents a letter describing the specific qualifying employment the alien will take up upon admission for permanent residence; or

(2) Is the spouse or child accompanying or following to join such an alien.

(e) For the purposes of this section, "qualifying position" shall include both the position occupied by the alien at the time the position in the alien's behalf was approved and any other position within the petitioning entity's organization, regardless of geographical location, which would otherwise meet the requirements for approval of such a petition in the alien's behalf. For the purposes of this section, "qualifying employment" shall mean any position in the United States of the kind required for approval of such a petition.

§ 45.6 Issuance of immigrant visa upon redetermination of admissibility.

When an alien to whom an immigrant visa having extended validity has been issued pursuant to § 45.5 of this part applies for a redetermination of admissibility and the consular officer determines that the alien remains admissible to the United States, the consular officer shall issue to the alien a new immigrant visa valid for a period of four months. The applicant shall execute a new application and provide the necessary current supporting documents. The applicant shall pay a new issuance fee. The consular officer shall insert the word "DUPLICATE" on Form OF-155A before the word "IMMIGRANT" on each immigrant visa issued pursuant to this section.

Dated: June 25, 1991.

James Ward,
Acting Assistant Secretary for Consular Affairs.

[FR Doc. 91-16795 Filed 7-16-91; 8:45 am]
BILLING CODE 4710-06-M

DEPARTMENT OF THE TREASURY

Bureau of Alcohol, Tobacco and Firearms

27 CFR Part 178

[T.D. ATF-313]

Commerce in Firearms and Ammunition

AGENCY: Bureau of Alcohol, Tobacco and Firearms (ATF), Department of the Treasury.

ACTION: Final rule (Treasury Decision).

SUMMARY: ATF is amended regulations in 27 CFR part 178 in accordance with decisions by the United States District Court for the District of South Carolina and by the United States Court of Appeals for the Fourth Circuit. All of these amendments are deregulating and result in reductions of recordkeeping by Federal firearms licensees.

Additionally, ATF is amending the regulations in part 178 to implement recent amendment to the Gun Control Act of 1968, as amended (GCA) made by the Crime Control Act of 1990, Public Law 101-647, 104 Stat. 4789. The regulatory amendments are minor technical and clarifying amendments.

EFFECTIVE DATE: July 17, 1991.

FOR FURTHER INFORMATION CONTACT: Daniel E. Crowley, ATF Specialist, Firearms and Explosives Operations Branch, Bureau of Alcohol, Tobacco and Firearms, 650 Massachusetts Avenue NW., Washington, DC 20226 (202) 535-6024.

SUPPLEMENTARY INFORMATION:

N.R.A. v. Brady

In September 1988, the National Rifle Association and other parties filed suit against ATF in the U.S. District Court for South Carolina, seeking an injunction against enforcement of regulations in 27 CFR part 178. T.D. ATF-270, 53 FR 10490, was issued to implement the 1988 amendments to the GCA made by Public Law 99-308, 100 Stat. 449 (1986). Specific regulations which were challenged in the suit included the definitions of "business premises," "gun show," and "manufacture," and the recordkeeping requirements for licensed collectors and for licensees' receipt and disposition of "personal" firearms.

In August 1989, the district court ruled in ATF's favor, except for the definition of "manufacture," which the court set aside on the basis that it could be confusing to gunsmiths. *National Rifle Association v. Brady, et al.*, Civ. Action No. 2-88-2518-8 (U.S.D.C. D.S.C., 1989).

The plaintiffs then appealed the case to the Court of Appeals.

The Court of Appeals upheld the majority of the challenged regulations, but held that two additional provisions in the regulations were invalid as exceeding statutory authority. *National Rifle Association v. Brady, et al.*, 914 F.2d 475 (4th Cir. 1990), rehearing en banc denied, 1990 U.S. App. Lexis 18447 (4th Cir. 1990), cert. denied, 59 U.S.L.W. 3701 (U.S. 1991). These included (1) a requirement in current regulations at 27 CFR 178.125a(a) for licensees to record in their bound book of sales of "personal" firearms the license number of the transferee if the transferee is a licensee, and the method of identification used if the transferee is a nonlicensee; and (2) a requirement in current regulations at 27 CFR 178.125(f) for licensed collectors to record as a "receipt" those curio or relic firearms possessed prior to obtaining their license. The provisions of the regulations found to be invalid by the district court and the Court of Appeals are deleted from the regulations in part 178 by this final rule.

Crime Control Act of 1990

This final rule also amends the regulations in part 178 to implement amendment to the GCA made by the Crime Control Act of 1990, Public Law 101-647, 104 Stat. 4789 (1990). The regulations issued in this final rule are all minor clarifying amendments issued under the following amended provisions of the GCA:

18 U.S.C. 922(a)(5) (relating to interstate sales by nonlicensees).

18 U.S.C. 922(j) (relating to stolen firearms).

18 U.S.C. 922(k) (relating to obliterated or altered serial numbers).

18 U.S.C. 925(a)(1) (relating to possession of firearms on behalf of governmental entities).

18 U.S.C. 925(c) (relating to relief from Federal firearms disabilities).

One major amendment to the GCA resulting from the Crime Control Act is a new 18 U.S.C. 922(q) making it unlawful for any person to assemble from imported parts any semiautomatic rifle or any shotgun prohibited from importation under 18 U.S.C. 925(d)(3). Regulations implementing this amendment will be the subject of a notice of proposed rulemaking to be published in the near future.

Executive Order 12291

It has been determined that this document is not a major regulation as defined in E.O. 12291 and a regulatory impact analysis is not required because

the economic consequences of the regulations are the direct result of the implementation of a court decision and implementation of a statute. Additionally, this final rule will not have an annual effect on the economy of \$100 million or more; it will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions; and it will not have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or foreign markets.

Administrative Procedure Act

Because this Treasury decision implements decisions of the U.S. District Court and Court of Appeals and makes minor technical amendments to the GCA, it is found to be unnecessary to issue this Treasury decision with notice and public procedure theron under 5 U.S.C. 553(b) or subject to the effective date limitation in 5 U.S.C. 553(d).

Regulatory Flexibility Act

The provisions of the Regulatory Flexibility Act relating to a final regulatory flexibility analysis are not applicable to this final rule because the agency was not required to publish a general notice of proposed rulemaking under 5 U.S.C. 553 or any other law.

Paperwork Reduction Act

The provisions of the Paperwork Reduction Act of 1980, Public Law 96-511, 44 U.S.C. chapter 35, and its implementing regulations, 5 CFR part 1320, do not apply to this final rule because there are no reporting or recordkeeping requirements.

Drafting Information

The originating drafter of this Treasury decision is Daniel E. Crowley of the Firearms and Explosives Operations Branch, Bureau of Alcohol, Tobacco and Firearms. Officials from the Bureau and from the Treasury Department, however, participated in developing this Treasury decision, both on matters of substance and style.

List of Subjects in 27 CFR Part 178

Administrative practice and procedure, arms and munitions, Authority delegations, Customs duties and inspection, Exports, Imports, Military personnel, Penalties, Reporting, Recordkeeping requirements, Research, Seizures and forfeiture, Transportation.

Authority and Issuance

27 CFR Part 178—Commerce in Firearms and Ammunition, is amended as follows:

PART 178—COMMERCE IN FIREARMS AND AMMUNITION

Paragraph 1. The authority citation for 27 CFR Part 178 continues to read as follows:

Authority: 18 U.S.C. 926

§ 178.11 [Amended]

Par. 2. Section 178.11 is amended by removing the definition for the term "Manufacture."

Par. 3. Section 178.30 is revised to read as follows:

§ 178.30 Out-of-State disposition of firearms by nonlicensees.

No nonlicensee shall transfer, sell, trade, give, transport, or deliver any firearm to any other nonlicensee, who the transferor knows or has reasonable cause to believe does not reside in (or if the person is a corporation or other business entity, does not maintain a place of business in) the State in which the transferor resides: *Provided*, That the provisions of this section:

(a) shall not apply to the transfer, transportation, or delivery of a firearm made to carry out a bequest of a firearm to, or any acquisition by interstate succession of a firearm by, a person who is permitted to acquire or possess a firearm under the laws of the State of his residence; and

(b) shall not apply to the loan or rental of a firearm to any person for temporary use for lawful sporting purposes.

Par. 4. Section 178.33 is revised to read as follows:

§ 178.33 Stolen firearms and ammunition.

No person shall transport or ship in interstate or foreign commerce any stolen firearm or stolen ammunition knowing or having reasonable cause to believe that the firearm or ammunition was stolen, and no person shall receive, conceal, store, barter, sell, or dispose of or pledge or accept as security for a loan, any stolen firearm or stolen ammunition which is moving as, which is a part of, which constitutes, or which has been shipped or transported in, interstate or foreign commerce, knowing or having reasonable cause to believe that the firearms or ammunition was stolen.

Par. 5. Section 178.34 is revised to read as follows:

§ 178.34 Removed, obliterated, or altered serial number.

No person shall knowingly transport, ship, or receive in interstate or foreign commerce any firearm which has had the importer's or manufacturer's serial number removed, obliterated, or altered, or possess or receive any firearm which has had the importer's or manufacturer's serial number removed, obliterated, or altered and has, at any time, been shipped or transported in interstate or foreign commerce.

Par. 6. Section 178.125 is amended by revising paragraph (f) to read as follows:

§ 178.125 Record of receipt and disposition.

(f) *Firearms receipt and disposition by licensed collectors.* Each licensed collector shall enter into a record each receipt and disposition of firearms curios or relics. The record required by this paragraph shall be maintained in bound form under the format prescribed below. The purchase or other acquisition of a curio or relic shall, except as provided in paragraph (g) of this section, be recorded not later than the close of the next business day following the date of such purchase or other acquisition. The record shall show the date of receipt, the name and address or the name and license number of the person from whom received, the name of the manufacturer and importer (if any), the model, serial number, type, and the caliber or gauge of the firearm curio or relic. The sale or other disposition of a curio or relic shall be recorded by the licensed collector not later than 7 days following the date of such transaction. When such disposition is made to a licensee, the commercial record of the transaction shall be retained, until the transaction is recorded, separate from other commercial documents maintained by the licensee, and be readily available for inspection. The record shall show the date of the sale or other disposition of each firearm curio or relic, the name and address of the person to whom the firearm curio or relic is transferred, or the name and license number of the person to whom transferred if such person is a licensee, and the date of birth of the transferee if other than a licensee. In addition, the licensee shall cause the transferee, if other than a licensee, to be identified in any manner customarily used in commercial transactions (e.g., a driver's license), and shall note on the record the method used. The format required for the record of receipt and disposition of firearms by collectors is as follows:

FIREARMS COLLECTORS ACQUISITION AND DISPOSITION RECORD

Description of firearm					Receipt		Disposition			
Manufacturer and/or importer	Model	Serial No.	Type	Caliber or gauge	Date	Name and address or name and license No.	Date	Name and address or name and license No.	Date of birth if nonlicensee	Driver's license No. or other identification if nonlicensee

* * * * *

Par. 7. Section 178.125a is amended by revising paragraph (a)(4) to read as follows:

§ 178.125a Personal firearms collection.

(a) * * * (4) the licensee enters the sale or other disposition of the firearm from the personal firearms collection into a bound record, under the format

prescribed below, identifying the firearm transferred by recording the name of the manufacturer and importer (if any), the model, serial number, type, and the caliber or gauge, and showing the date of the sale or other disposition, the name and address of the transferee, or the name and business address of the transferee if such person is a licensee,

and the date of birth of the transferee if other than a licensee. In addition, the licensee shall cause the transferee, if other than a licensee, to be identified in any manner customarily used in commercial transactions (e.g., a drivers license). The format required for the disposition record of personal firearms is as follows:

DISPOSITION RECORD OF PERSONAL FIREARMS

Description of firearm					Disposition		
Manufacturer and/or importer	Model	Serial No.	Type	Caliber or gauge	Date	Name and address (business address if licensee)	Date of birth if nonlicensee

* * * * *

Par. 8. Section 178.141 is amended by revising paragraph (a) to read as follows:

§ 178.141 General.

(a) The transportation, shipment, receipt, possession, or importation of any firearm or ammunition imported for, sold or shipped to, or issued for the use of, the United States or any department or agency thereof or any State or any department, agency, or political subdivision thereof.

* * * * *

Par. 9. Section 178.144(i) is revised to read as follows:

§ 178.144 Relief from disabilities under the act.

(i) (A) A licensee who incurs disabilities under the Act (see § 178.32(a)) during the term of a current license or while the licensee has pending a license renewal application, and who files an application for removal of such disabilities, shall not be barred from licensed operations for 30 days following the date on which the applicant was first subject to such disabilities (or 30 days after the date upon which the conviction for a crime punishable by imprisonment for a term exceeding 1 year becomes final), and if the licensee files the application for relief as provided by this section within such 30-day period, the licensee may further continue licensed operations

during the pendency of the application. A licensee who does not file such application within such 30-day period shall not continue licensed operations beyond 30 days following the date on which the licensee was first subject to such disabilities (or 30 days from the date the conviction for a crime punishable by imprisonment for a term exceeding 1 year becomes final).

(2) In the event the term of a license of a person expires during the 30-day period specified in paragraph (i)(1) of this section, or during the pendency of the application for relief, a timely application for renewal of the license must be filed in order to continue licensed operations. Such license application shall show that the applicant is subject to Federal firearms disabilities, shall describe the event giving rise to such disabilities, and shall state when the disabilities were incurred.

(3) A licensee shall not continue licensed operations beyond 30 days following the date the Director issues notification that the licensee's applications for removal of disabilities has been denied.

(4) When as provided in this paragraph a licensee may no longer continue licensed operations, any application for renewal of license filed by the licensee during the pendency of the application for removal of disabilities shall be denied by the regional director (compliance).

Signed: May 10, 1991.

Stephen E. Higgins,
Director.

Approved: June 18, 1991.

Peter K. Nunez,
Assistant Secretary (Enforcement).
[FR Doc. 91-16947 Filed 7-16-91; 8:45 am]
BILLING CODE 4810-31-M

DEPARTMENT OF THE INTERIOR

Office of Surface Mining Reclamation and Enforcement

30 CFR Part 901

Alabama Regulatory Program;
Extension of Study Concerning Excess Spoil Disposal

AGENCY: Office of Surface Mining Reclamation and Enforcement (OSM), Interior.

ACTION: Final rule.

SUMMARY: OSM is announcing the extension of the trial period for a study of provisions for the disposal of excess spoil on abandoned mine sites contained in the Alabama regulatory program (hereinafter referred to as the Alabama program) under the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The trial period is extended to January 1, 1993. This extension is necessary to allow the director of OSM to consider and evaluate the results of several test sites that have implemented the Alabama

provisions for the disposal of excess spoil on abandoned mine sites.

EFFECTIVE DATE: August 16, 1991.

FOR FURTHER INFORMATION CONTACT: Jesse Jackson, Jr., Director, Birmingham Field Office, Office of Surface Mining Reclamation and Enforcement, Barber Business Park, 135 Gemini Circle, suite 215, Homewood, Alabama 35209; telephone (205) 290-7282.

SUPPLEMENTARY INFORMATION:

- I. Background on the Alabama Program.
- II. Submission of Amendment.
- III. Director's Findings.
- IV. Summary and Disposition of Comments.
- V. Director's Decision.
- VI. Procedural Determinations.

I. Background on the Alabama Program

On May 20, 1982, the Secretary of the Interior conditionally approved the Alabama program. Information pertinent to the general background, revisions, modifications and amendments to the permanent program submission as well as the Secretary's findings, the disposition of comments, and a detailed explanation of the conditions of approval of the Alabama program can be found in the May 20, 1982, *Federal Register* (47 FR 22030). Subsequent actions taken with regard to Alabama's program and program amendments can be found in 30 CFR 901.10 and 901.15.

II. Submission of Amendment

The Secretary's conditional approval of Alabama's regulatory program on May 20, 1982 (47 FR 22030) announced that a one-year trial period would be held in order to evaluate the adequacy of Alabama's plan for disposal of excess spoil on abandoned mine sites. The one-year period expired May 20, 1983, and was extended by the Secretary to August 20, 1984, on July 27, 1983 (48 FR 34026). The extension was granted because few permit applications requesting approval to use the excess spoil provisions had been received, and the data was therefore insufficient to allow OSM to make a meaningful evaluation of the plan at that time.

On November 1, 1984, the State submitted a status report to OSM to fulfill the provisions of terms of approval of the Alabama program and subsequent extensions of the trial period concerning excess spoil disposal. After a thorough review of the status report and additional investigation, OSM decided that a further extension of time was necessary to build sufficient data upon which to base an evaluation of the excess spoil disposal program. On May 23, 1985, the trial period was extended from August 20, 1984, to August 20, 1989 (50 FR 21254).

On July 22, 1990 (55 FR 27224), the trial period was extended to January 1, 1991, again due to insufficient data.

On January 7, 1991, the State submitted a status report to OSM to fulfill the provisions of terms of approval of the Alabama program and subsequent extensions of the trial period concerning excess spoil disposal. At present, there are still only five completed sites and the sixth site (as required by the extension of May 23, 1985) is not due for completion in the immediate future.

III. Director's Findings

On July 27, 1983 (48 FR 34026), the trial period was extended to August 20, 1984, and on May 23, 1985 (50 FR 21254), the trial period was further extended to August 20, 1989. On July 2, 1990 (55 FR 27224), the trial period was extended to January 1, 1991. All extensions were due to insufficient data, and the May 23, 1985, extension specifies the completion of six sites as the minimum basis for a decision as to the practicability of the State's excess spoil provisions.

On January 7, 1991, the Alabama Surface Mining Commission (ASMC) submitted a report to OSM on the excess spoil project. The OSM has reviewed this report and performed additional investigations on the sites covered. While additional sites have been approved or are in progress, a total of only five sites have been completed, and there are no other sites scheduled for completion in the immediate future. Consequently, there is still insufficient data to allow OSM to make a meaningful evaluation of the plan.

Therefore, the Director is extending the trial period until January 1, 1993. This period would be extended with the following stipulations:

(1) The Director, at his discretion, may terminate the trial study period at any time during the extended period if sufficient data becomes available. Upon termination of the trial study period and OSM's analysis of the data, the Director may then approve or disapprove the subject excess spoil provisions.

(2) At any time during the trial period the Director may, at his discretion, place a moratorium on new permit applications which include consideration of the excess spoil provisions.

(3) The State is required to continue to report to the OSM Birmingham Field Office annually on August 20th on the status of all permits and permit applications which include consideration under the excess spoil provisions.

IV. Summary and Disposition of Comments

Public Comments

The public comment period and opportunity to request a public hearing announced in the February 26, 1991, *Federal Register* ended on March 28, 1991. The scheduled public hearing was not held as no one requested an opportunity to provide testimony.

Agency Comments

Pursuant to section 503(b) of SMCRA and the implementing regulations at 30 CFR 732.17(h)(11)(i), comments were solicited from various Federal agencies with an actual or potential interest in the Alabama program. No comments were received.

V. Director's Decision

The Director has determined that the trial period for the disposal of excess spoil on abandoned mine sites shall be extended to January 1, 1993. The Federal rules at 30 CFR 901.15 are being amended to implement this action.

VI. Procedural Determinations

Compliance With the National Environmental Policy Act

The Secretary has determined that, pursuant to section 702(d) of SMCRA, 30 U.S.C. 1292(d), no environmental impact statement need be prepared on this rulemaking.

Compliance with Executive Order No. 12291 and the Regulatory Flexibility Act

On July 12, 1984, the Office of Management and Budget (OMB) granted OSM an exemption from sections 3, 4, 7, and 8 of Executive Order 12291 for actions directly related to approval of State regulatory programs. Therefore, this action is exempt from preparation of a Regulatory Impact Analysis and regulatory review by OMB.

The Department of the Interior has determined that this rule would not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) This rule would not impose any new requirements; rather, it would ensure that existing requirements established by SMCRA and the Federal rules will be met by the State.

Paperwork Reduction Act

This rule does not contain information collection requirements which require approval by the OMB under 44 U.S.C. 3507.

List of Subjects in 30 CFR Part 901

Intergovernmental relations, Surface mining, Underground mining.

Dated: July 3, 1991.

Carl C. Close,

Assistant Director, Eastern Support Center.

For the reasons set forth in the preamble, title 30, chapter VII, subchapter T of the Code of Federal Regulations is amended as set forth below:

PART 901—ALABAMA

1. The authority citation for part 901 continues to read as follows:

Authority: 30 U.S.C. 1201 *et seq.*

2. Section 901.15 is amended by revising the first sentence of paragraph (e) introductory text to read as follows:

§ 901.15 Approval of regulatory program amendments.

(e) The trial period for Alabama's excess spoil disposal plan is hereby extended from January 1, 1991, to January 1, 1993. * * *

[FR Doc. 91-16972 Filed 7-16-91; 8:45 am]

BILLING CODE 4310-05-M

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Part 52**

[FRL 3974-2]

Approval and Promulgation of Air Quality Implementation Plans; New Mexico; Permit Fees

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rulemaking.

SUMMARY: This notice approves a revision to the New Mexico State Implementation Plan (SIP) to include Air Quality Control Regulation (AQCR) 700—Filing and Permit Fees, as filed with the State Records and Archives Center on November 20, 1989. AQCR 700 implements a fee system for all preconstruction air permits issued by the New Mexico Environment Department (NMED). This action is in response to section 110(a)(2)(K) of the 1977 Clean Air Act which requires States to include a permit fee system in their SIPs. This section was amended to 110(a)(2)(L) in the 1990 Clean Air Act. This submittal is not meant to respond to the title V operating permit fee requirements of the 1990 Clean Air Act Amendments.

The Governor of New Mexico submitted AQCR 700 to EPA on May 14, 1990. Review of this regulation indicates that New Mexico has met the requirements of section 110(a)(2)(K) of the 1977 Clean Air Act.

DATES: This action will be effective September 16, 1991 unless notice is received on or before August 16, 1991 that adverse or critical comments will be submitted. If the effective date is delayed timely notice will be published in the *Federal Register*.

ADDRESSES: Written comments on this action should be addressed to Mr. Thomas H. Diggs, Chief, Planning Section, at the EPA Regional Office listed below. Copies of the documents relevant to this proposed action are available for public inspection during normal business hours at the following locations. The interested persons wanting to examine these documents should make an appointment with the appropriate office at least twenty-four hours before the visiting day.

U.S. Environmental Protection Agency, Region 6, Air Programs Branch (6T-AP), 1445 Ross Avenue, Dallas, Texas 75202-2733.

Public Information Reference Unit, Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. New Mexico Environment Department, Air Quality Bureau, 1190 St. Francis Drive, room So. 2100, Santa Fe, New Mexico 87503.

FOR FURTHER INFORMATION CONTACT: Mr. Bill Deese, Planning Section (6T-AP), Air Programs Branch, U.S. EPA Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733, Telephone (214) 655-7214, or (FTS) 255-7214.

SUPPLEMENTARY INFORMATION: Section 110(a)(2)(K) of the 1977 Clean Air Act requires the States to include a permit fee system in their SIPs. The States are required to collect fees from owners or operators of major stationary sources (as defined in the 1977 Clean Air Act) for permits issued pursuant to the 1977 Clean Air Act. The fees should be sufficient to cover the reasonable costs of reviewing and acting upon any application for such a permit and the cost of implementing and enforcing the terms and conditions of any such permit (excluding court costs and other costs associated with any enforcement action). The requirement for a permit fee system has been carried forth in the 1990 Clean Air Act Amendments as section 110(a)(2)(L). The permit fee system as required by section 110(a)(2)(K) of the 1977 Clean Air Act is to remain in effect until superseded by the Administrator's approval of a fee program under title V—Permits.

The Environmental Protection Agency (EPA) in 1981 developed a "Permit Fee Guideline" to assist States with the preparation of revisions to their SIPs which address the 1977 permit fee requirement. The guideline includes a review of the 1977 Clean Air Act requirements for permit fees, legislative history and relevant court cases, costs to be considered, basic program implementation considerations, and examples of fee systems in effect around the country. According to the guideline document, the States are given considerable flexibility in selecting the types of fees they could use to recover permit-related expenses. The guideline states on page 3 that, "at a minimum, fees should be collected, for permits required under the Act, from major stationary sources as defined in section 302(j) of the Act, and as further defined under section 169(1) for prevention of significant deterioration, and section 169A(g)(7) for visibility protection."

New Mexico AQCR 700 specifies filing fees for permit revisions and for each application for a permit to construct or modify a source. AQCR 700 also outlines specific permit fees and methods of fee payments, and clarifies filing and permit fee applicability. EPA accepts the above filing and permit fee provisions in New Mexico AQCR 700 as meeting federal guidance and regulatory requirements.

Final Action

By this action, EPA is approving New Mexico Air Quality Control Regulation (AQCR) 700—Filing and Permit Fees, as filed with the State Records and Archives Center on November 20, 1989, as meeting the requirements of section 110(a)(2)(K) of the 1977 Clean Air Act, and of section 110(a)(2)(L) (i) and (ii) of the 1990 Clean Air Act Amendments.

EPA has reviewed this revision to the New Mexico SIP and is approving it as submitted. EPA is publishing this action without prior proposal because the Agency views this as a noncontroversial amendment and anticipates no adverse comments. This action will be effective September 16, 1991 unless, on or before August 16, 1991, notice is received that adverse or critical comments will be submitted.

If such notice is received, this action will be withdrawn before the effective date by publishing two subsequent notices. One notice will withdraw the final action and another will begin a new rulemaking by announcing a proposal of the action and establishing a comment period. If no such comments are received, the public is advised that

this action will be effective September 16, 1991.

The EPA has reviewed this request for revision of the federally-approved State implementation plan for conformance with the provisions of the 1990 Amendments enacted on November 15, 1990. The EPA is not approving this request as meeting the new permit fee program requirements under Title V of the 1990 Amendments.

Nothing in this action should be construed as permitting or allowing or establishing a precedent for any future request for revision to any SIP. Each request for revision to the SIP shall be considered separately in light of specific technical, economic, and environmental factors, and in relation to relevant statutory and regulatory requirements.

Regulatory Process

This action has been classified as a table 3 action by the Regional Administrator under the procedures published in the *Federal Register* on January 19, 1989 (54 FR 2214-2225). On January 6, 1989, the Office of Management and Budget waived tables 2 and 3 SIP revisions (54 FR 2222) from the requirements of section 3 of Executive Order 12291 for a period of two years.

Under 5 U.S.C. 605(b), the Administrator has certified that SIP approvals do not have a significant economic impact on a substantial number of small entities. (See 46 FR 8709.)

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by September 16, 1991. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. (See section 307(b)(2).)

List of Subjects in 40 CFR Part 52

Air pollution control, Carbon monoxide, Hydrocarbons, Incorporation by reference, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides.

Authority: 42 U.S.C. 7401-7642.

Note: Incorporation by reference of the SIP for the State of New Mexico was approved by the Director of the *Federal Register* on July 1, 1982.

Dated: July 1, 1991.
George Alexander,
Acting Regional Administrator (6A).

40 CFR part 52, subpart GG, is amended as follows:

PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401-7642.

Subpart GG—New Mexico

2. Section 52.1620 is amended by adding paragraph (c)(43) to read as follows:

§ 52.1620 Identification of plan.

(c) * * *

(43) A revision to the New Mexico State Implementation Plan (SIP) to include Air Quality Control Regulation 700—Filing and Permit Fees, as filed with the State Records and Archives Center on November 20, 1989, and submitted by the Governor of New Mexico on May 14, 1990.

(i) Incorporation by reference.

(A) New Mexico Air Quality Control Regulation 700—Filing and Permit Fees, as filed with the State Records and Archives Center on November 20, 1989.

[FR Doc. 91-16902 Filed 7-16-91; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Part 52

[AL-029; FRL-3954-8]

Approval and Promulgation of Implementation Plans; Alabama: PM₁₀ SIP Revisions for Jefferson County

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is approving revisions to the State Implementation Plan (SIP) for Jefferson County submitted by Alabama on October 5, 1988, and March 15, 1989, for particulate matter. On July 1, 1987, EPA promulgated new ambient air quality standards for particulate matter which are based upon the measurement of particles having aerodynamic diameter of 10 microns or less (PM₁₀). Consequently, States are required to develop plans which provide for attainment and maintenance of these new standards. The Alabama SIP revisions for Jefferson County demonstrate that the existing SIP for total suspended particulates (TSP) is adequate to provide for attainment and maintenance of the PM₁₀ standards.

DATES: This action will be effective September 16, 1991 unless notice is received on or before August 16, 1991 that someone wishes to submit adverse or critical comments. If the effective date is delayed, timely notice will be published in the *Federal Register*.

ADDRESSES: Written comments should be addressed to Beverly T. Hudson, EPA Region IV's Air Programs Branch (see Region IV address below). Copies of the State's submittal are available for review during normal business hours at the following locations:

Public Information Reference Unit,
Environmental Protection Agency, 401
M Street SW., Washington, DC 20460.
Environmental Protection Agency,
Region IV, Air Programs Branch, 345
Courtland Street NE., Atlanta, Georgia
30365.

Alabama Department of Environmental
Management, 1751 Congressman W.L.
Dickinson Drive, Montgomery,
Alabama 36109.

FOR FURTHER INFORMATION CONTACT:
Beverly T. Hudson, Air Programs
Branch, EPA Region IV, at the above
address and telephone number (404)
347-2864 or FTS 257-2864.

SUPPLEMENTARY INFORMATION: Pursuant to the 1977 amendments to the Clean Air Act, EPA, on July 1, 1987 (52 FR 24634), promulgated revised primary and secondary National Ambient Air Quality Standards (NAAQS) for particulate matter by replacing the total suspended particulate matter standard with a standard that included only those particles with aerodynamic diameter less than or equal to a nominal 10 micrometers. The particles are referred to as PM₁₀.

In order for States to regulate PM₁₀ they must make certain changes in their rules and regulations and in the SIPs. The changes to the rules and the SIP must insure that the PM₁₀ NAAQS are attained and maintained; that new and modified sources which emit PM₁₀ are reviewed; that PM₁₀ is one of the pollutants to trigger alert, warning, and emergency actions; and that the State's monitoring network be designed to include PM₁₀ monitors. These changes must be made regardless of the existing levels of PM₁₀ in any area of the State. The regulations call for the PM₁₀ SIPs to be submitted nine months after the Federal PM₁₀ regulations went into effect on July 31, 1987.

Because PM₁₀ air quality data was lacking in most areas of the country, EPA could not arbitrarily designate areas as attainment or nonattainment. EPA then developed an analysis using historical ambient TSP data and any

available PM₁₀ data to classify all counties in the nation into one of three groups based upon the statistical probabilities of not attaining the new PM₁₀ standards. EPA has classified the following: (1) Areas with probability of not attaining the PM₁₀ standards of at least 95 percent as "Group I", (2) areas with a probability of not attaining the PM₁₀ standard of between 20 and 95 percent as "Group II", and (3) areas with a probability of not attaining the PM₁₀ standard of less than 20 percent as "Group III". All areas are currently conducting ambient monitoring to determine whether actual ambient PM₁₀ concentrations are above or below the PM₁₀ NAAQS.

A control strategy is required to show how PM₁₀ emissions will be reduced to provide for attainment and maintenance of the PM₁₀ NAAQS for a Group I area. For Group II areas, the States are required to commit to perform additional PM₁₀ monitoring in that area and to prepare a control strategy if the data show with certainty that the standards are being exceeded. The commitments must be submitted in the form of a SIP revision and are termed a "committal" SIP.

Historical TSP monitoring data and all available PM₁₀ data in Alabama indicate there are no areas where the PM₁₀ standards are likely to be exceeded and only two areas where PM₁₀ NAAQS might be exceeded. Based on available TSP data and limited PM₁₀ data, the areas bounded by the city limits of Leeds and North Birmingham in Jefferson County, Alabama, are classified as Group II areas. This means that a committal SIP is required and PM₁₀ monitoring will continue in accordance with the 40 CFR part 58 monitoring regulations.

On October 5, 1988, the State of Alabama submitted to EPA revisions to the SIP which incorporated the Jefferson County PM₁₀ regulations including the committal SIP provisions. Subsequent to the October 5 submittal, by letters of October 11 and November 16, 1988, EPA noted deficiencies in the revisions. As a result of the noted deficiencies, the State's rulemaking process was reinitiated, culminating in a public hearing on November 17, 1988. All of EPA's comments and revisions are reflected in the regulations resubmitted by Alabama on March 15, 1989.

The Jefferson County PM₁₀ SIP included the following:

- a. State ambient air quality standards for PM₁₀ at least as stringent as the NAAQS;
- b. A trigger for preconstruction review for new or modified sources which

- would emit significant amounts of either PM or PM₁₀ emissions;
- c. An emergency episode plan to prevent PM₁₀ concentrations from reaching the significant harm level of 600 µg/m³;
- d. Ambient PM₁₀ monitoring requirements consistent with 40 CFR part 58; and
- e. Requirements consistent with 40 CFR 51.322 and 51.323 for the reporting of actual annual emissions of PM₁₀ (beginning with emissions for 1988) for point sources emitting 100 tons per year or more.

The Jefferson County Department of Health developed and implemented air quality regulations in Jefferson County, Alabama. The agency's regulations are at least as stringent as the corresponding Alabama regulations approved on September 24, 1990 (55 FR 38994). The agency's regulations are incorporated by the State as part of the Alabama SIP. Therefore, the State has the authority to implement the regulations in Jefferson County if the agency cannot.

The State has submitted a committal SIP for the two Group II areas in Jefferson County. The committal SIP contains all the requirements identified in the July 1, 1987, final promulgation of the SIP requirements to PM₁₀. The Jefferson County Department of Health commits to support the PM₁₀ SIP as follows:

(1) Establish and operate a PM₁₀ air monitoring network to gather ambient PM₁₀ data at least to an extent consistent with minimum EPA requirements and guidance.

(2) Analyze ambient PM₁₀ data and report any 24-hour PM₁₀ exceedances of the NAAQS to EPA within 45 days of its occurrence.

(3) Acknowledge that a PM₁₀ nonattainment problem exists whenever an appropriate number of exceedances of the 24 hour NAAQS have been observed or whenever sufficient data are available that indicates an arithmetic mean above the annual NAAQS has occurred and report that problem to the offices of Alabama and EPA immediately.

(4) Evaluate the program within 30 days after the event in (3) above or by August 1990 (whichever comes first) to determine if the current program is sufficient to attain and maintain the primary PM₁₀ standards and immediately report the findings to the offices of Alabama and EPA.

(5) Develop a PM₁₀ control strategy as soon as practical after issuance of notification given in commitment 4. The control strategy will have a target date for attainment and maintenance of the

NAAQS three years following the notification date in commitment 4. Further, the Jefferson County Department of Health reserves the option to request the two year extension of the attainment date as provided under section 110(e) of the Clean Air Act.

On September 5, 1990, Alabama submitted the PM₁₀ emission inventory and PM₁₀ monitoring data for Jefferson County, Alabama. The current PM₁₀ monitoring network is sufficient to maintain the PM₁₀ requirements of CFR 58.13. Although Jefferson County measured one PM₁₀ exceedance in 1989, there has not been a measured violation of the PM₁₀ NAAQS.

This submittal contained information on actual and allowable PM and PM₁₀ emissions. Jefferson County identified the emission control measures it was relying upon to maintain the NAAQS. Jefferson County's PM₁₀ revisions meet the procedural requirements in 40 CFR part 51. The revisions did not relax or change the existing TSP regulations. Therefore, no TSP regulation which caused the area to achieve attainment with the old TSP NAAQS had been relaxed. It was also noted that the basis for achieving and maintaining the PM₁₀ standard was not believed to be due to a short term downturn in the economy. This information is found in a letter dated March 4, 1991, from the Jefferson County Department of Health.

Final Action

EPA has reviewed the submitted material and found it to meet the requirements of 40 CFR part 51. Therefore, EPA is today approving Jefferson County PM₁₀ revisions submitted by Alabama.

Under 5 U.S.C. 605(b), I certify that these revisions will not have a significant economic impact on a substantial number of small entities. (See 46 FR 8709)

This action is being taken without prior proposal because the changes are noncontroversial and EPA anticipates no significant comments on them. The public should be advised that this action will be effective September 16, 1991.

However, if notice is received on or before August 16, 1991, that someone wishes to submit adverse or critical comments, this action will be withdrawn and two subsequent notices will be published before the effective date. One notice will withdraw the final action and another will begin a new rulemaking by announcing a proposal of the action and establishing a comment period.

Nothing in this action shall be construed as permitting or allowing or establishing a precedent for any future request for a revision to any state implementation plan. Each request for revision to the state implementation plan shall be considered separately in light with specific technical economic and environmental factors and in relation to relevant statutory and regulatory requirements.

This action has been classified as a Table 3 action by the Regional Administrator under the procedures published in the *Federal Register* on January 19, 1989 (54 FR 2214-2225). On January 6, 1989, the Office of Management and Budget waived Table 2 and 3 SIP revisions (54 FR 2222) from the requirements of section 3 of Executive Order 12291 for a period of two years.

Under section 307(b)(1) of the Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate Circuit by September 16, 1991. This action may not be challenged later in proceeding to enforce its requirements (See 307(b)(2)).

List of Subjects in 40 CFR Part 52

Air pollution control, Incorporation by reference, Intergovernmental relations, Particulate matter, Reporting and recordkeeping requirements.

Dated: March 21, 1991.

Patrick M. Tobin,
Acting Regional Administrator.

Part 52 of chapter I, title 40, Code of Federal Regulations, is amended as follows:

PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401-7642.

Subpart B—Alabama

2. Section 52.50 is amended by adding paragraph (c)(53) to read as follows:

§ 52.50 Identification of plan.

(c) * * *

(53) October 8, 1988 and March 15, 1989, revisions to Jefferson County's Implementation Plan for PM₁₀ were submitted by the Alabama Department of Environmental Management. The submittal included a committal SIP.

(i) Incorporation by reference.

(A) The following revisions submitted on March 15, 1989, to chapters 1, 2, and 4 of Jefferson County Implementation Plan for PM₁₀ were effective February 8, 1989.

Chapter I—Chapter I General Provisions:

1.3 (Definitions):

Soiling Index, PM₁₀, Particulate Matter, PM₁₀ emission, Total Suspended Particulate, Citation, Control Device, Employee, Six Minute Average, Violator.

Chapter 2—Permits: 2.3.1(g)(1), (2), and (3); 2.3.2(b)(11) and 20; 2.3.4(a)(5); 2.3.2(2); 2.4.2.(w) (1) and (2); 2.4.3; 2.4.8(h), 2.4.8(k) and (l); 2.4.12(a)(7) and 8; 2.4.15(e); and 2.4.19(a).

Chapter 4—Air Pollution Emergency:

4.3.4(b), (c), (d), and (e); 4.3.5(b), (c), (d), and (e); and 4.3.6(b), (c), (d), and (e).

(ii) Other material.

(A) March 15, 1989, letter from the Alabama Department of Environmental Management.

3. Section 52.63 is added to read as follows:

§ 52.63 PM₁₀ State Implementation Plan development in group II areas.

On March 15, 1989, the State submitted a committal SIP for the cities of Leeds and North Birmingham in Jefferson County. The committal SIP contains all the requirements identified in the July 1, 1987, promulgation of the SIP requirements for PM₁₀ at 52 FR 24681. The SIP commits the State to submit an emissions inventory, continue to monitor for PM₁₀, report data and to submit a full SIP if a violation of the PM₁₀ and National Ambient Air Quality Standards is detected.

[FR Doc. 91-16903 Filed 7-18-91; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Part 180

[OPP-300230A; FRL-3929-7]

RIN 2070 AB-78

Poly(Vinylpyrrolidone/1-Eicosene) and Poly(Vinylpyrrolidone/1-Hexadecene); Tolerance Exemptions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: These rules exempt from the requirement of a tolerance the pesticide chemicals poly(vinylpyrrolidone/1-eicosene) (CAS Reg. No. 28211-18-9) when used as an inert ingredient (dispersing agent) and poly(vinylpyrrolidone/1-hexadecene) (CAS Reg. No. 63231-81-2) when used as an inert ingredient (dispersing agent) in pesticide formulations applied to growing crops and raw agricultural commodities after harvest. These proposed regulations were requested by the GAF Chemicals Corp. (GAF).

EFFECTIVE DATE: Effective on July 17, 1991.

ADDRESSES: Written objections may be submitted to the Hearing Clerk (A-110), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: By mail: Kerry Leifer, Registration Support Branch, Environmental Protection Agency, 401 M St., SW., Washington, DC 20460. Office location and telephone number: Rm. 726, CM #2, 1921 Jefferson Davis Highway, Arlington, VA 22202, (703)-557-5180.

SUPPLEMENTARY INFORMATION: EPA issued a proposed rule, published in the *Federal Register* of May 15, 1991 (56 FR 22383), which announced that GAF Chemicals Corp., 1361 Alps Rd., Wayne, NJ 07470, had requested that 40 CFR part 180 be amended by establishing exemptions from the requirement of a tolerance for poly(vinylpyrrolidone/1-eicosene) (CAS Reg. No. 28211-18-9) when used as an inert ingredient (encapsulation resin) and poly(vinylpyrrolidone/1-hexadecene) (CAS Reg. No. 63231-81-2) (dispersing agent) in pesticide formulations applied to growing crops and raw agricultural commodities after harvest.

There were no comments received in response to the proposed rule. The data submitted in support of the proposal and other relevant material have been evaluated and discussed in the proposed rule.

Inert ingredients are ingredients that are not active ingredients as defined in 40 CFR 162.3(c), and include, but are not limited to, the following types of ingredients (except when they have a pesticidal efficacy of their own): Solvents such as alcohols and hydrocarbons; surfactants such as polyoxyethylene polymers and fatty acids; carriers such as clay and diatomaceous earth; thickeners such as carrageenan and modified cellulose; wetting and spreading agents; propellants in aerosol dispensers; and emulsifiers. The term "inert" is not intended to imply nontoxicity; the ingredient may or may not be chemically active.

Under the EPA review procedures for tolerance exemptions for inert ingredients, the Agency conducts a review of the data base supporting any prior clearances, the data available in the scientific literature, and any other relevant data. Based on a review of such data, the Agency has determined that no additional test data will be required to support these regulations.

Based on the above information and review of its use, it has been found that when used in accordance with good agricultural practices these ingredients

are useful and do not pose a hazard to humans or the environment. In conclusion, the Agency has determined that the amendment to 40 CFR part 180 will protect the public health. Therefore, the regulations are being established as set forth below.

Any person adversely affected by these regulations may, within 30 days after publication of this document in the *Federal Register*, file written objections and/or a request for a hearing with the Hearing Clerk, at the address given above. The objections must include a statement of the factual issue(s) on which a hearing is requested and the requestor's contentions on each such issue. A request for a hearing will be granted if the Administrator determines that the material submitted shows the following: There is a genuine and substantial issue of fact; there is a reasonable possibility that available evidence identified by the requestor would, if established, resolve one or more of such issues in favor of the requestor, taking into account uncontested claims or facts to the contrary; and resolution of the factual issue(s) in the manner sought by the requestor would be adequate to justify the action requested.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

List of Subjects in 40 CFR Part 180

Administrative practice and procedure, Agricultural commodities, Pesticides and pests

Dated: July 1, 1991.

Douglas D. Camp,
Director, *Office of Pesticide Programs*.

Therefore, 40 CFR part 180 is amended as follows:

1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 346a and 371.

2. In subpart D, new § 180.1104 is added, to read as follows:

§ 180.1104 Poly(vinylpyrrolidone/1-eicosene); exemption from the requirement of a tolerance.

Poly(vinylpyrrolidone/1-eicosene) (CAS Reg. No. 28211-18-9), minimum average molecular weight 3,000, is exempted from the requirement of a tolerance when used as an inert ingredient (dispersing agent) for pesticides applied to growing crops or to raw agricultural commodities after harvest. The inert shall not constitute more than 10 percent by weight of any pesticide formulation. Registration of each new pesticide formulation

incorporating this dispersing agent must be supported by residue data for the active ingredients.

3. In subpart D, new § 180.1105 is added, to read as follows:

§ 180.1105 Poly(vinylpyrrolidone/1-hexadecene); exemption from the requirement of a tolerance.

Poly(vinylpyrrolidone/1-hexadecene) (CAS Reg. No. 63231-81-2), minimum average molecular weight 4,700, is exempted from the requirement of a tolerance when used as an inert ingredient (dispersing agent) for pesticides applied to growing crops or to raw agricultural commodities after harvest. The inert shall not constitute more than 5 percent by weight of any pesticide formulation. Registration of each new pesticide formulation incorporating this dispersing agent must be supported by residue data for the active ingredient(s).

[FR Doc. 91-16661 Filed 7-16-91; 8:45 am]

BILLING CODE 6560-50-F

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

43 CFR Public Land Order 6865

[OR-943-4214-10; GP1-170; OR-44410]

Withdrawal of Public Land for the National Historic Oregon Trail Interpretive Center at Flagstaff Hill; OR

AGENCY: Bureau of Land Management, Interior.

ACTION: Public Land Order.

SUMMARY: This order withdraws 507.50 acres of public land from surface entry and mining for a period of 20 years for the Bureau of Land Management to protect the National Historic Oregon Trail Interpretive Center at Flagstaff Hill. The land has been and remains open to mineral leasing.

EFFECTIVE DATE: July 17, 1991.

FOR FURTHER INFORMATION CONTACT: Champ Vaughan, BLM Oregon State Office, P.O. Box 2965, Portland, Oregon 97208, 503-280-7169.

By virtue of the authority vested in the Secretary of the Interior by section 204 of the Federal Land Policy and Management Act of 1976, 90 Stat. 2751; 43 U.S.C. 1714, it is ordered as follows:

1. Subject to valid existing rights, the following described public land is hereby withdrawn from settlement, sale, location, or entry under the general land laws, including the United States mining laws (30 U.S.C. ch. 2), but not from leasing under the mineral leasing laws,

to protect a Bureau of Land Management interpretive center.

Willamette Meridian

T. 9 S., R. 41 E.,

Sec. 5, lots 8 and 9, NW 1/4 SW 1/4 NE 1/4, S 1/2 N 1/2 SE 1/4 NW 1/4, S 1/2 SE 1/4 NW 1/4, and that portion of the N 1/2 SW 1/4 located north of the northerly right-of-way line of State Highway No. 86;

Sec. 6, lots 1, 2, 3, and 4, S 1/2 NE 1/4, and those portions of lot 5, SE 1/4 NW 1/4, SE 1/4 SW 1/4, and N 1/2 SE 1/4 located north of the northerly right-of-way line of State Highway No. 86.

The area described contains approximately 507.50 acres in Baker County.

2. The withdrawal made by this order does not alter the applicability of those public land laws governing the use of the land under lease, license, or permit, or governing the disposal of their mineral or vegetative resources other than under the mining laws.

3. This withdrawal will expire 20 years from the effective date of this order unless, as a result of a review conducted before the expiration date pursuant to section 204(f) of the Federal Land Policy and Management Act of 1976, 43 U.S.C. 1714(f), the Secretary determines that the withdrawal shall be extended.

Dated: July 8, 1991.

Frank A. Bracken,

Deputy Secretary of the Interior.

[FR Doc. 91-16946 Filed 7-18-91; 8:45 am]

BILLING CODE 4310-JB-M

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 90 and 97

[PR Docket No. 89-552; DA 91-841]

Private Land Mobile Radio Services; Use of the 220 MHz Frequency Band

AGENCY: Federal Communications Commission.

ACTION: Final rule; Errata.

SUMMARY: This Errata was released to correct certain typographical errors in the Report and Order in PR Docket No. 89-552 (FCC 91-74), 56 FR 19598, April 29, 1991, and to correct certain rule change entries in that Report and Order that were not consistent with other rule changes or with the intention of the Commission expressed in the text. These corrections are necessary to correctly set forth the ongoing operating privileges of amateur operators and amateur stations, and to clarify existing rules as they apply to applicants and

prospective licensees of 220–222 MHz systems.

EFFECTIVE DATE: July 17, 1991.

FOR FURTHER INFORMATION CONTACT:

John J. Borkowski, Rules Branch, Land Mobile and Microwave Division, Private Radio Bureau, Federal Communications Commission, (202) 634–2443.

SUPPLEMENTARY INFORMATION: In the matter of amendment of part 90 of the Commission's rules to provide for the use of the 220–222 MHz band by the Private Land Mobile Radio Services, RM-6595.

Second Errata

Released: July 9, 1991.

By the Deputy Chief, Private Radio Bureau:

1. On April 17, 1991, the Commission released a Report and Order, FCC 91-74, in this proceeding.¹ This document corrects certain typographical errors in the Report and Order and also corrects certain rule change entries in the Report and Order that were not consistent with other rule changes or with the intention of the Commission expressed in the text. A brief explanation of the errors corrected follows.

2. The following typographical errors are corrected:

Part 90 authority citation: The last portion was inadvertently omitted.

Section 90.149(a): "license" should read "licenses."

Section 90.213(a): In new footnote 18, "per cent" should read "percent."

Section 90.243(a)(2): "Radio" should not appear after "Railroad."

Section 90.713(c): "is a not a" should read "is not a."

Section 90.725(e): The reference to paragraph (b)(1) of this section should be a reference to paragraph (d)(1) of this section.

Section 90.725(h): A closed parenthesis symbol was omitted.

3. In the rules changes to § 90.213, it may have been unclear from the published explanatory text adding footnote 18 to the 50–450 MHz line entry in the Frequency Tolerance Table that the footnote should be entered separately for each of the four columns associated with that line entry, as well as being added in its entirety as text at the end of the Table. Therefore, we are delineating with specificity the line entry change in this document. Additionally, we clarify the Table by adding "(MHz)" to the heading "Frequency Range."

4. Section 90.727 provides for implementation schedules beyond the

normal construction period for certain non-nationwide non-commercial 220–222 MHz systems. Subparagraphs (2) and (3) of paragraph (a) of this section were intended to reference the normal construction period for those systems of eight months,² and not the twelve months referenced in those subparagraphs. The rule changes attached correct these references to be eight months.

5. In § 90.731 we are retaining the text of paragraph (a) but removing the text of paragraph (b). The reasons for this are twofold. The first sentence of paragraph (b) is redundant because the second sentence of paragraph (a) of § 90.715 already provides that control stations operate on mobile frequencies. Also, the second sentence of paragraph (b) contemplates multiple licensees sharing a single channel—the 220–222 MHz band, however, is structured to provide exclusivity for individual local licensees on their respective channels in each geographic area, based upon co-channel mileage reuse criteria. Similarly, no nationwide channel will be authorized to more than one licensee.

6. In paragraph (c) of § 90.733, we are deleting the introductory phrase "When two or more contiguous channels are authorized to a single licensee (up to a 10-channel nationwide block)" and replacing it with "For operations requiring less than a 4 kHz bandwidth." At paragraphs 95 and 96 of the Report and Order,³ the Commission stated that wideband operation would not be permitted on contiguous frequencies, and that each 5 kHz channel must be operated individually. To this end the Commission adopted a 4 kHz maximum authorized channel bandwidth within each 5 kHz assignment. The text of the Report and Order is clear in this regard, and all the adopted rules are consistent with this holding except for the introductory language in paragraph (c) of § 90.733. This language, therefore, is inconsistent with the intent of the Commission as expressed in the text and all other rules.

7. In paragraph (d) of § 90.737, we are adding the word "initial" before the word "grant" to be consistent with the wording of paragraph (f) of § 90.725. This is to make absolutely clear that any amendments to licenses that result in subsequent license grants with or without new expiration dates do not extend the eight-month period in which a non-nationwide system must be fully constructed. This eight-month period

commences upon grant of the initial license for the system.

8. We are adding "(37.3 miles)" after "60 kilometers" in §§ 90.725(h) and 90.741. Generally, in subpart T we provided the approximate mileage equivalent of distances expressed in kilometers.

9. In § 97.203(d), the frequency segments 144.05–144.06 MHz and 432.07–437.08 MHz should have read 144.275–144.300 MHz and 432.300–432.400 MHz. This segment listing must be corrected; it did not take account of a recent Commission action amending this rule.⁴

10. In § 97.205(b), the frequency segment 50.0–52.0 MHz should have read 50.0–51.0 MHz. This segment listing must be corrected; it did not take account of a recent Commission action amending this rule.⁵

11. In § 97.301(f), the frequency segment 220–222 MHz listed in the Table should be 222.10–223.91 MHz. Additionally, the reference to § 97.303(b) in this line entry is being deleted. This is because the reference to the 1.25 meter band (the 220 MHz band) is being removed from § 97.303(b). The 1.25 meter band should no longer be included in § 97.303(b) because the radiolocation operations its inclusion was designed to protect are no longer authorized.⁶

12. For the reasons stated above, it is ordered that 47 CFR parts 90 and 97 are amended as set forth below. This action is taken pursuant to 47 U.S.C. 303(r) and 47 CFR 0.131 and 0.331.

13. It is further ordered that these rule changes are effective immediately upon publication in the *Federal Register*.⁷

* See Report and Order, In the Matter of Amendment of the Amateur Service Rules Concerning Frequencies Authorized for Automatically Controlled Stations in Beacon Operation, PR Docket No. 89-65, 5 FCC Rcd 1278 (1990).

¹ See Report and Order, In the Matter of Amendment of the Amateur Service Rules to Expand the 6 Meter Repeater Subband, PR Docket No. 88-527, 5 FCC Rcd 612 (1990).

² See Footnote 627 to the Table of Frequency Allocations, 47 CFR 2.106.

³ These rule changes are non-substantive in nature, correcting errors, omissions, and inconsistencies, and therefore are not subject to the thirty day effective date requirement of the Administrative Procedure Act, 5 U.S.C. 553(d). In any event, because it is necessary to correctly set forth the ongoing operating privileges of amateur operators and amateur stations, and because the part 90 rule changes are required to clarify existing rules as they apply to applicants and prospective licensees of 220–222 MHz systems, we find that good cause exists to make these rules effective on less than thirty days notice pursuant to the provisions of 5 U.S.C. 553(d)(3).

¹ The official text of the rules changes adopted in this item appears at 56 FR 19598 (1991).

² See 47 CFR 90.725(f).

³ Report and Order, PR Docket No 89-552, FCC 91-74 (April 17, 1991).

List of Subjects in 47 CFR Part 90

Business and Industry, Radio,
Trunking.

47 CFR Part 97

Amateur radio; Frequencies; Radio.

Federal Communications Commission.

Beverly G. Baker,
Deputy Chief, Private Radio Bureau.

Rule Changes

47 CFR parts 90 and 97 are amended as follows:

1. The authority citation for part 90 is revised to read as follows:

Authority: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303 and 332, unless otherwise noted.

§ 90.149 [Amended]

2. Paragraph (a) of 47 CFR 90.149 is amended by adding the letter "s" to the word "license" to read "licenses."

3. Paragraph (a) of 47 CFR 90.213 is amended by revising the line entry 50-450 MHz in the Frequency Tolerance Table to include a reference to footnote 18 in each of the four columns of that entry to read as follows:

§ 90.213 Frequency tolerance.

(a) * * *

FREQUENCY TOLERANCE

Frequency range (MHz)	Fixed and base stations		Mobile stations	
	Over 2W output power	200 W or less output power	Over 200 W output power	2W or less output power
50-450	* * * * * 5-6 17 18.0005	* * * * * 5-6 17 18.0005	* * * * * 5-17 18.0005	* * * * * 7-17 18.0005

§ 90.213 [Amended]

4. In paragraph (a) of 47 CFR 90.213, footnote 18 is amended by revising the words "per cent" to read "percent."

§ 90.243 [Amended]

5. Paragraph (a)(2) of 47 CFR 90.243 is amended by removing the word "Radio" where it appears immediately following the word "Railroad."

§ 90.713 [Amended]

6. The second sentence of paragraph (c) of 47 CFR 90.713 is amended by removing the word "a" where it appears immediately before the word "not."

§ 90.725 [Amended]

7. Paragraph (e) of 47 CFR 90.725 is amended by revising the reference to "paragraph (b)(1)" to read "paragraph (d)(1)."

8. Introductory text of paragraph (h) of 47 CFR 90.725 is amended by revising the six words that immediately precede the Table that now read "within 60 kilometers of the coordinates listed:" to read "within 60 kilometers (37.3 miles) of the coordinates listed:."

§ 90.727 [Amended]

9. Paragraphs (a) (2) and (3) of 47 CFR 90.727 are amended by revising the number "12" that appears immediately before the word "months" in each paragraph to read "eight."

10. 47 CFR 90.731 is revised in its entirety to read as follows:

§ 90.731 Restrictions on operational-fixed stations.

Except for control stations, operational-fixed stations will not be authorized in the 220-222 MHz band. Licensees may utilize their authorized frequencies for fixed signaling in accordance with § 90.235 of this part.

11. Paragraph (c) of 47 CFR 90.733 is revised to read as follows:

§ 90.733 Permissible operations.

(c) For operations requiring less than a 4 kHz bandwidth, more than a single emission may be utilized within the authorized bandwidth. In such cases, the frequency stability requirements of § 90.213 do not apply, but the out-of-band emission limits of § 90.209(1) must be met.

§ 90.737 [Amended]

12. Paragraph (d) of 47 CFR 90.737 is amended by adding the word "initial" between the words "of" and "grant."

§ 90.741 [Amended]

13. 47 CFR 90.741 is amended by adding "(37.3 miles)" after the words "60 kilometers."

14. The authority citation for part 97 continues to read as follows:

Authority: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-155, 301-609, unless otherwise noted.

15. 47 CFR 97.203 is amended by revising paragraph (d) to read as follows:

§ 97.203 Beacon station.

(d) A beacon may be automatically controlled while it is transmitting on the 28.20-28.30 MHz, 50.06-50.08 MHz, 144.275-144.300 MHz, 222.05-222.06 MHz or 432.300-432.400 MHz segments, or on the 33 cm and shorter wavelength bands.

16. 47 CFR 97.205 is amended by revising paragraph (b) to read as follows:

§ 97.205 Repeater station.

(b) A repeater may receive and retransmit only on the 10 m and shorter wavelength frequency bands except the 28.0-29.5 MHz, 50.0-51.0 MHz, 144.0-144.5 MHz, 145.5-146.0 MHz, 431.0-433.0 MHz and 435.0-438.0 MHz segments.

17. 47 CFR 97.301 is amended by revising the first line entry in the Table in paragraph (f) to read as follows:

§ 97.301 Authorized frequency bands.

(f) For a station having a control operator holding a Novice Class operator license:

Wavelength band (VHF)	ITU-Region 1 (MHz)	ITU-Region 2 (MHz)	ITU-Region 3 (MHz)	Sharing requirements see § 97.303 (Paragraph)
1.25 m.....		222.10-223.91		(a)

§ 97.303 [Amended]

18. Paragraph (b) of 47 CFR 97.303 is amended by removing the words "the 1.25 m band," from the text of the paragraph.

[FR Doc. 91-16677 Filed 7-16-91; 8:45 am]

BILLING CODE 6712-01-M

ENVIRONMENTAL PROTECTION AGENCY**48 CFR Part 1513**

[FRL-3974-7]

Acquisition Regulation

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: This rule amends the Environmental Protection Agency Acquisition Regulation (EPAAR) limitation on small purchase oral orders. The amendment will allow Contracting Officers to place oral orders up to \$25,000 for competitive acquisitions. Oral orders for sole source acquisitions will be limited to \$10,000; oral orders for construction will be limited to \$2,000; oral orders for services subject to the Service Contract Act will be limited to \$2,500.

EFFECTIVE DATE: August 16, 1991.

FOR FURTHER INFORMATION CONTACT: Marilyn Torpey (202) 245-3941 (FTS 245-3941).

SUPPLEMENTARY INFORMATION:**A. Determination To Issue a Final Rule**

The EPA has made a determination to publish an increase in the oral purchase order limitation without prior comment in accordance with the Federal Acquisition Regulation (FAR). FAR 1.301(b) provides that rules which do not have a significant effect beyond the internal operating procedures of the agency or have a significant cost or administrative impact on contracts or offerors need not be published for comment. This increase in the oral purchase order limit will affect EPA internal operating procedures only.

B. Background

By placing oral purchase orders for routine acquisitions, Contracting Officers save time and reduce the paperwork required in the procurement process. Based on the successful use of oral purchase orders in the past, this rule raises the dollar limit on oral orders from \$10,000 to \$25,000 for competitive acquisitions. Because of FAR requirements governing noncompetitive acquisitions over \$10,000, construction over \$2,000, and services over \$2,500, it is not practicable to award an oral purchase order in these circumstances.

C. Executive Order 12291

OMB Bulletin No. 85-7 dated December 14, 1984, established the requirements for the Office of Management and Budget (OMB) review of agency procurement regulations. This regulation is not in any of the categories cited in the bulletin which require review.

D. Paperwork Reduction Act

This rule does not contain additional information collection requirements; therefore, no Information Collection Request (ICR) has been prepared and submitted for OMB approval in accordance with the Paperwork Reduction Act, 44 U.S.C. 3501, et seq.

E. Regulatory Flexibility Act

The EPA certifies this rule does not have a significant impact on a substantial number of small entities within the meaning of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq. The rule amends internal operating procedures for the use of oral purchase orders; it does not affect small entities.

List of Subjects in 48 CFR Part 1513

Government procurement, Small purchases and other simplified purchase procedures.

Title 48, part 1513 of the Code of Federal Regulations is amended as follows:

PART 1513—[Amended]

1. The authority for part 1513 continues to read as follows:

Authority: Sec. 205(c), 63 Stat 390, as amended, 40 U.S.C. 486(c).

2. Section 1513.570 is revised to read as follows:

§ 1513.570 Oral purchase orders.

(A) Except as noted in paragraph (c) of this section, Contracting Officers should issue oral purchase orders for supplies or services for competitive acquisitions whose estimated value is \$25,000 or less. Oral orders reduce procurement leadtime and costs associated with processing purchase orders; therefore, files must be documented to substantiate why an oral order was not used if the following conditions are present:

- (1) Supplies or services are readily available.
- (2) Specifications are not detailed and terms are not complex.
- (3) The vendor will accept an oral order and does not require written confirmation of the order.

(b) When an oral order is placed the Contracting Officer shall document the file to include the following:

- (1) An abstract of offers (for competitive acquisitions);
- (2) Adequate sole source justification (for noncompetitive requirements);
- (3) The date the order was placed;
- (4) The purchase order number;
- (5) The vendor's name, address and phone number;

- (6) The procurement amount;
- (7) Delivery and discount terms;
- (8) A record showing that the vendor was advised of all applicable FAR and EPAAR clauses.

(9) A record showing that one copy of the purchase order was distributed to the originator, the commitment clerk, the servicing finance office and the shipping/receiving officer.

(c) Oral purchase orders shall not be used for—

- (1) Sole source acquisitions over \$10,000.
- (2) Acquisitions for construction over \$2,000.
- (3) Acquisitions for services over \$2,500 which are subject to the Service Contract Act.

Dated: July 8, 1991.

John C. Chamberlin,

Director, Office of Administration.

[FR Doc. 91-16883 Filed 7-16-91; 8:45 am]

BILLING CODE 6560-50-M

Proposed Rules

Federal Register

Vol. 56, No. 137

Wednesday, July 17, 1991

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Part 1007

[DA-91-015]

Milk in the Georgia Marketing Area; Notice of Proposed Suspension of Certain Provisions of the Order

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Proposed suspension of rule.

SUMMARY: This notice invites written comments on a proposal to suspend for the month of August 1991 certain provisions of the Georgia Federal milk marketing order. The proposed suspension would make inoperative the requirement that producers be paid on the basis of a base and excess payment plan for the month of August 1991. A cooperative association requested the suspension because the current provisions tend to discourage milk production at a time when milk production is declining.

DATES: Comments are due no later than July 25, 1991.

ADDRESSES: Comments (two copies) should be filed with the USDA/AMS/Dairy Division, Order Formulation Branch, Room 2968, South Building, P.O. Box 96456, Washington, DC 20090-6456.

FOR FURTHER INFORMATION CONTACT: Clayton H. Plumb, Chief, Order Formulation Branch, USDA/AMS/Dairy Division, Order Formulation Branch, Room 2968, South Building, P.O. Box 96456, Washington, DC 20090-6456, (202) 447-6274.

SUPPLEMENTARY INFORMATION: The Regulatory Flexibility Act (5 U.S.C. 601-612) requires the Agency to examine the impact of a proposed rule on small entities. Pursuant to 5 U.S.C. 605(b), the Administrator of the Agricultural Marketing Service has certified that this proposed action would not have a significant economic impact on a substantial number of small entities.

Such action would tend to encourage milk production during the month of August which is a month of declining milk production.

This proposed rule has been reviewed by the Department in accordance with Departmental Regulation 1512-1 and the criteria contained in Executive Order 12291 and has been determined to be a "non-major" rule.

Notice is hereby given that, pursuant to the provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601-674), the suspension of the following provisions of the order regulating the handling of milk in the Georgia marketing area is being considered for August 1991:

1. In § 1007.32, paragraph (a).
2. In § 1007.61 (a) the words "of September through January".
3. In § 1007.61, paragraph (b).

All persons who want to send written data, views or arguments about the proposed suspension should send two copies of them to the USDA/AMS/Dairy Division, Order Formulation Branch, Room 2968, South Building, P.O. Box 96456, Washington, DC 20090-6456, by the 7th day after publication of this notice in the **Federal Register**. The period for filing comments is limited to 7 days because a longer period would not provide the time needed to complete the required procedures by the August 1991 suspension period.

The comments that are sent will be made available for public inspection in the Dairy Division during normal business hours (7 CFR 1.27(b)).

Statement of Consideration

The proposed suspension would make inoperative the requirement that producers be paid on the basis of the base and excess plan for the month of August 1991. The proposal was submitted by Dairymen, Inc. (DI), a cooperative association of producers having a substantial amount of milk pooled on the Georgia milk market. In support of its proposal, the cooperative said the suspension is needed to remove a conflict which currently exists between the order provisions and the need for additional milk in this market for the month of August.

DI said that the current order provisions provide that producers, for the months of February through August, be paid a base and excess price. The proponent cooperative said that this

plan was designed to encourage milk production during the base-building months of September through January when a greater volume of milk is needed for fluid use, and to discourage additional production (excess milk) during the months of February through August when the additional milk production is not needed for fluid use.

DI said that marketing conditions have changed since those provisions were adopted in the Georgia order. In recent years, milk production during the month of August has been in short supply. DI believes that production should not be discouraged through the payment of the excess price for additional production during the month of August.

Accordingly, it may be appropriate to suspend the aforesaid provisions for the month of August 1991.

List of Subjects in 7 CFR Part 1007

Milk marketing orders.

The authority citation for 7 CFR part 1007 continues to read as follows:

Authority: Secs. 1-19, 48 Stat. 31, as amended; 7 U.S.C. 601-674.

Signed at Washington, DC, on July 11, 1991,
Daniel Haley,
Administrator.

[FR Doc. 91-17032 Filed 7-16-91; 8:45 am]

BILLING CODE 3410-02-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Airspace Docket No. 90-AEA-03]

Proposed Alteration of Transition Area and Control Zone; Du Bois, PA

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The FAA is proposing to modify the 700 foot Transition Area and Control Zone established for the Du Bois—Jefferson County Airport, Du Bois, PA, due to the relocation of the Du Bois Nondirectional Radio Beacon (NDB), development of a new Standard Instrument Approach Procedure (SIAP) based upon this NDB, and a review of air traffic control procedures in the area. Additionally, the geographic coordinates

of the airport are being updated to reflect the actual airport location. The intended effect of this proposed action is to modify controlled airspace in the area to that required to segregate aircraft operating under instrument meteorological conditions from those operating under visual flight rules in controlled airspace.

DATES: Comments must be received on or before August 31, 1991.

ADDRESSES: Send comments on the rule in triplicate to: Edward R. Trudeau, Manager, System Management Branch, AEA-530, Docket No. 90-AEA-03, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy Int'l Airport, Jamaica, NY 11430.

The official docket may be examined in the Office of the Assistant chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430.

An informal docket may also be examined during normal business hours in the System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430.

FOR FURTHER INFORMATION CONTACT: Mr. Curtis L. Brewington, Airspace Specialist, System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430; telephone: (718) 917-0857.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested parties are invited to participate in this proposed rulemaking by submitting such written data, views, or arguments as they may desire. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions on the proposal. Comments are specifically invited on the overall regulatory, aeronautical, economic, environmental, and energy aspects of the proposal. Communications should identify the airspace docket and be submitted in triplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments on this notice must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Airspace Docket No. 90-AEA-03". The postcard will be date/time stamped and returned to the commenter. All communications received before the specified closing date for comments will be considered.

before taking action on the proposed rule. The proposal contained in this notice may be changed in the light of comments received. All comments submitted will be available for examination in the Rules Docket both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerned with this rulemaking will be filed in the docket.

Availability of NPRMs

Any person may obtain a copy of this Notice of Proposed Rulemaking (NPRM) by submitting a request to the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRMs should also request a copy of Advisory Circular No. 11-2A which describes the application procedure.

The Proposal

The FAA is considering amendments to §§ 71.171 and 71.181 of part 71 of the Federal Aviation Regulation (14 CFR part 71) to modify the 700 foot Transition Area and Control Zone at Du Bois, PA. These actions are considered necessary due to the relocation of the Du Bois NDB, development of a new SIAP based upon the NDB, and a review of air traffic control procedures in the area. Additionally, the geographic coordinates of the airport are being updated to reflect the actual location of the airport. Sections 71.171 and 71.181 of part 71 of the Federal Aviation Regulations were republished in Handbook 7400.6G dated September 4, 1990.

The FAA has determined that these proposed regulations only involve an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. They, therefore: (1) Are not a "major rule" under Executive Order 12291; (2) are not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) do not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that these proposed rules will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 71

Aviation safety, control zones, transition areas.

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me, the Federal Aviation Administration proposes to amend part 71 of the Federal Aviation Regulations (14 CFR part 71) as follows:

PART 71—DESIGNATION OF FEDERAL AIRWAYS, AREA LOW ROUTES, CONTROLLED AIRSPACE, AND REPORTING POINTS

1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. 1348(a); 1354(a), 1510; Executive Order 10854; 49 U.S.C. 106(g); (Revised Pub. L. 97-449, January 12, 1983); 14 CFR 11.69.

§ 71.171 [Amended]

2. Section 71.171 is amended as follows:

Du Bois, PA [Revised]

Du Bois-Jefferson County Airport, Du Bois, PA (lat. 41°10'42" N., long. 78°53'56" W.)

Clarion, PA, VORTAC (lat. 41°08'46" N., long. 79°27'30" W.)

Du Bois northeast course ILS-OM (lat. 41°13'11" N., long. 78°48'09" W.)

Within a 4.6-mile radius of the Du Bois-Jefferson County Airport and within 3 miles each side of the Du Bois-Jefferson County Airport ILS localizer northeast course, extending from the 4.6-mile radius to 8.5 miles northeast of the OM and within 2.5 miles each side of the Clarion, PA, VORTAC: 086°(T) 092°(M) radial, extending from the 4.6-mile radius zone to 23 miles east of the VORTAC and within 2.5 miles each side of a 242°(T) 248°(M) bearing from a point at lat. 41°10'30" N., long. 78°54'30" W., extending from said point to 5.5 miles southwest of said point.

§ 71.181 [Amended]

3. Section 71.181 is amended as follows:

Du Bois, PA [Revised]

Du Bois-Jefferson County Airport, Du Bois, PA (lat. 41°10'42" N., long. 78°53'56" W.)

Du Bois NDB (lat. 41°14'06" N., long. 78°45'16" W.)

Du Bois northeast course ILS-OM (lat. 41°13'11" N., long. 78°48'09" W.)

That airspace extending upward from 700 feet above the surface within a 9.8-mile radius of the Du Bois-Jefferson County Airport and within 4.5 miles either side along a 062°(T) 071°(M) bearing from the Du Bois NDB extending northeast from the 9.8-mile radius to 11.5 miles northeast of the Du Bois ILS OM.

Issued in Jamaica, New York, on June 28, 1991.
Gary W. Tucker,
Manager, Air Traffic Division.
[FR Doc. 91-16983 Filed 7-16-91; 8:45 am]
BILLING CODE 4910-13-M

14 CFR Part 71

[Airspace Docket No. 91-AEA-12]

Proposed Revocation of Transition Area; Broadway, NJ**AGENCY:** Federal Aviation Administration (FAA), DOT.**ACTION:** Notice of proposed rulemaking.

SUMMARY: The FAA is proposing to revoke the 700 foot Transition Area surrounding the Broadway, NJ, VHF Omnidirectional Range/Distance Measuring Equipment (VOR/DME) air navigation facility. The controlled airspace in this area is not needed to contain air traffic control procedures in controlled airspace. The intended effect of this proposed action would be to return that amount of controlled airspace not needed by the FAA, back to the public.

DATES: Comments must be received on or before August 15, 1991.

ADDRESSES: Send comments on the rule in triplicate to: Edward R. Trudeau, Manager, System Management Branch, AEA-530, Docket No. 91-AEA-12, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy Int'l Airport, Jamaica, NY 11430.

The official docket may be examined in the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430.

An informal docket may also be examined during normal business hours in the System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430.

FOR FURTHER INFORMATION CONTACT: Mr. Curtis L. Brewington, Airspace Specialist, System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430; telephone: (718) 917-0857.

SUPPLEMENTARY INFORMATION:**Comments Invited**

Interested parties are invited to participate in this proposed rulemaking by submitting such written data, views or arguments as they may desire. Comments that provide the factual basis

supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions on the proposal. Comments are specifically invited on the overall regulatory, aeronautical, economic, environmental, and energy aspects of the proposal. Communications should identify the airspace docket and be submitted in triplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments on this notice must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Airspace Docket No. 91-AEA-12". The postcard will be date/time stamped and returned to the commenter. All communications received before the specified closing date for comments will be considered before taking action on the proposed rule. The proposal contained in this notice may be changed in the light of comments received. All comments submitted will be available for examination in the Rules Docket both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerned with this rulemaking will be filed in the docket.

Availability of NPRMs

Any person may obtain a copy of this Notice of Proposed Rulemaking (NPRM) by submitting a request to the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRMs should also request a copy of Advisory Circular No. 11-2A which describes the application procedure.

The Proposal

The FAA is considering an amendment to § 71.181 of part 71 of the Federal Aviation Regulations (14 CFR part 71) to revoke the 700 foot Transition Area at Broadway, NJ. This amount of controlled airspace is not needed by the FAA to contain air traffic control procedures. Section 71.181 of part 71 of the Federal Aviation Regulations was republished in Handbook 7400.6G dated September 4, 1990.

The FAA has determined that this proposed regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore: (1) Is not a "major rule" under

Executive Order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this a routine matter that will only affect air traffic procedures and air navigation, it is certified that this proposed rule will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 71

Aviation safety, Transition areas.

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me, the Federal Aviation Administration proposes to amend part 71 of the Federal Aviation Regulations (14 CFR part 71) as follows:

PART 71—DESIGNATION OF FEDERAL AIRWAYS, AREA LOW ROUTES, CONTROLLED AIRSPACE, AND REPORTING POINTS

1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. 1348(a), 1354(a), 1510; Executive Order 10854; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983); 14 CFR 11.69.

§ 71.181 [Amended]

2. Section 71.181 is amended as follows:

Broadway, NJ [Removed]

Issued in Jamaica, New York, on June 28, 1991.

Gary W. Tucker,
Manager, Air Traffic Division.

[FR Doc. 91-16983 Filed 7-16-91; 8:45 am]
BILLING CODE 4910-13-M

14 CFR Part 71

[Airspace Docket No. 91-AEA-13]

Proposed Revocation of Transition Area; Pitman, NJ**AGENCY:** Federal Aviation Administration (FAA), DOT.**ACTION:** Notice of proposed rulemaking.

SUMMARY: The FAA is proposing to revoke the 700 foot Transition Area at Pitman, NJ. This action is proposed due to the deactivation of the Pitman Airport, Pitman, NJ in 1987. All air traffic control procedures to this airport have been cancelled. The intended effect of this proposed action is to return that amount of controlled airspace which

was needed to contain air traffic control procedures at the Pitman Airport, Pitman, NJ, back to the public.

DATES: Comments must be received on or before August 15, 1991.

ADDRESSES: Send comments on the rule in triplicate to: Edward R. Trudeau, Manager, System Management Branch, AEA-530, Docket No. 91-AEA-13, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy Int'l Airport, Jamaica, NY 11430.

The official docket may be examined in the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430.

An informal docket may also be examined during normal business hours in the System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430.

FOR FURTHER INFORMATION CONTACT: Mr. Curtis L. Brewington, Airspace Specialist, System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430; telephone: (718) 917-0857.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested parties are invited to participate in this proposed rulemaking by submitting such written data, views or arguments as they may desire. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions on the proposal. Comments are specifically invited on the overall regulatory, aeronautical, economic, environmental, and energy aspects of the proposal. Communications should identify the airspace docket and be submitted in triplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments on this notice must submit, with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Airspace Docket No. 91-AEA-13". The postcard will be date/time stamped and returned to the commenter. All communications received before the specified closing date for comments will be considered before taking action on the proposed rule. The proposal contained in this notice may be changed in the light of comments received. All comments submitted will be available for examination in the Rules Docket both

before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerned with this rulemaking will be filed in the docket.

Availability of NPRMs

Any person may obtain a copy of this Notice of Proposed Rulemaking (NPRM) by submitting a request to the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRMs should also request a copy of Advisory Circular No. 11-2A which describes the application procedure.

The Proposal

The FAA is considering an amendment to § 71.181 of part 71 of the Federal Aviation Regulations (14 CFR part 71) to revoke the 700 foot Transition Area at Pitman, NJ. This action is proposed due to the deactivation of the Pitman Airport, Pitman, NJ, and the cancellation of all air traffic control procedures to this airport. Section 71.181 of part 71 of the Federal Aviation Regulations was republished in Handbook 7400.8G dated September 4, 1990.

The FAA has determined that this proposed regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore: (1) Is not a "major rule" under Executive Order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this proposed rule will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 71

Aviation safety, Transition areas.

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me, the Federal Aviation Administration proposes to amend part 71 of the Federal Aviation Regulations (14 CFR part 71) as follows:

PART 71—DESIGNATION OF FEDERAL AIRWAYS, AREA LOW ROUTES, CONTROLLED AIRSPACE, AND REPORTING POINTS

1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. 1348(a), 1354(a), 1510; Executive Order 10854; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983); 14 CFR 11.69.

§ 71.181 [Amended]

2. Section 71.181 is amended as follows:

Pitman, NJ [Removed].

Issued in Jamaica, New York, on June 28, 1991.

Gary W. Tucker,
Manager, Air Traffic Division.

[FR Doc. 91-16984 Filed 7-16-91; 8:45 am]
BILLING CODE 4910-13-M

14 CFR Part 71

[Airspace Docket No. 91-AEA-14]

Proposed Revocation of Transition Area; Stone Harbor, NJ

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The FAA is proposing to revoke the 700 foot Transition Area established at Stone Harbor, NJ. A review of air traffic control procedures in the area has determined that this area is not needed to contain aircraft operations in controlled airspace. The intended effect of this proposed action is to return that amount of controlled airspace not needed by the FAA, back to the public.

DATES: Comments must be received on or before August 15, 1991.

ADDRESSES: Send comments on the rule in triplicate to: Edward R. Trudeau, Manager, System Management Branch, AEA-530, Docket No. 91-AEA-14, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy Int'l Airport, Jamaica, NY 11430.

The official docket may be examined in the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430.

An informal docket may also be examined during normal business hours in the System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy

International Airport, Jamaica, New York 11430.

FOR FURTHER INFORMATION CONTACT:

Mr. Curtis L. Brewington, Airspace Specialist, System Management Branch, AEA-530, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, New York 11430; telephone (718) 917-0857.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested parties are invited to participate in this proposed rulemaking by submitting such written data, views or arguments as they may desire. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions on the proposal. Comments are specifically invited on the overall regulatory, aeronautical, economic, environmental, and energy aspects of the proposal. Communications should identify the airspace docket and be submitted in triplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments on this notice must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Airspace Docket No. 91-AEA-14". The postcard will be date/time stamped and returned to the commenter. All communications received before the specified closing date for comments will be considered before taking action on the proposed rule. The proposal contained in this notice may be changed in the light of comments received. All comments submitted will be available for examination in the Rules Docket both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerned with this rulemaking will be filed in the docket.

Availability of NPRMs

Any person may obtain a copy of this Notice of Proposed Rulemaking (NPRM) by submitting a request to the Office of the Assistant Chief Counsel, AEA-7, F.A.A. Eastern Region, Federal Building #111, John F. Kennedy International Airport, Jamaica, NY 11430.

Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRMs should also request a copy of Advisory Circular No. 11-2A which describes the application procedure.

The Proposal

The FAA is considering an amendment to § 71.181 of part 71 of the Federal Aviation Regulations (14 CFR part 71) to revoke the 700 foot Transition Area established at Stone Harbor, NJ. A review of air traffic control procedures in the area has revealed that this area is no longer required to contain aircraft operations in controlled airspace. Section 71.181 of part 71 of the Federal Aviation Regulations was republished in Handbook 7400.6G dated September 4, 1990.

The FAA has determined that this proposed regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore: (1) Is not a "major rule" under Executive Order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this proposed rule will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 71

Aviation safety, Transition areas.

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me, the Federal Aviation Administration proposes to amend part 71 of the Federal Aviation Regulations (14 CFR part 71) as follows:

PART 71—DESIGNATION OF FEDERAL AIRWAYS, AREA LOW ROUTES, CONTROLLED AIRSPACE, AND REPORTING POINTS

1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. App. 1348(a), 1354(a), 1510; Executive Order 10854; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983); 14 CFR 11.69.

§ 71.181 [Amended]

2. Section 71.181 is amended as follows:

Stone Harbor, NJ [Removed]

Issued in Jamaica, New York, on June 28, 1991.

Gary W. Tucker,

Manager, Air Traffic Division.

[FR Doc. 91-16986 Filed 7-16-91; 8:45 am]

BILLING CODE 4910-13-M

RAILROAD RETIREMENT BOARD

20 CFR Part 340

RIN 3220-AA77

Recovery of Benefits

AGENCY: Railroad Retirement Board.

ACTION: Proposed rule.

SUMMARY: The Railroad Retirement Board (Board) hereby proposes to amend its regulations by adding three instances in which recoveries of overpayments of benefits under the Railroad Unemployment Insurance Act will not be subject to waiver, and to clarify certain procedures relating to the recovery of overpayments under that statute.

DATES: Comments must be received by August 16, 1991.

ADDRESSES: Secretary to the Board, Railroad Retirement Board, 844 Rush Street, Chicago, Illinois 60611.

FOR FURTHER INFORMATION CONTACT:

Thomas W. Sadler, General Attorney, Bureau of Law, Railroad Retirement Board, 844 Rush Street, Chicago, Illinois 60611, (312) 751-4513 (FTS 386-4513).

SUPPLEMENTARY INFORMATION: Section 2(d) of the Railroad Unemployment Insurance Act (RUIA) (45 U.S.C. 352(d)) provides that an overpayment of benefits under that Act may be waived if the overpaid individual was not at fault in causing the overpayment and recovery of the overpayment would be contrary to the purpose of the RUIA (financial hardship test) or would be against equity or good conscience.

On January 28, 1988, the Board published regulations explaining how an overpaid individual may request waiver and how the Board applies waiver under the RUIA (20 CFR parts 320 and 340, appearing at 53 FR 2485). Section 340.10(e) provides that an overpayment will not be waived when the recovery of the overpayment is sought from an individual other than the overpaid employee. On June 20, 1989, the Board proposed to amend § 340.10(e) by adding two situations in which waiver also will not be available (54 FR 25877). Proposed § 340.10(e)(2) provided that where the overpayment is equal to or less than 10 times the current maximum daily benefit rate under the RUIA (presently \$31) such an overpayment will not be waived even though the overpaid employee was not at fault in causing the overpayment. In such cases the overpaid employee is hard pressed to show that recovery of the overpayment, for example by installment payments, would cause him or her financial hardship or would be

against equity or good conscience. The proposed rule thus provided that where the overpayment is equal to or less than 10 times the daily benefit rate that there be a conclusive presumption that it is not contrary to the purpose of the RUIA or against equity or good conscience to recover such payments. Consequently, in such an instance there will be no right to request waiver of the overpayment.

Proposed § 340.10(e)(3) provided that there shall be no waiver where the overpayment of RUIA benefits may be recovered from an accrual of a retroactive award of annuities under the Railroad Retirement Act (RRA). A sick or disabled railroad employee who is receiving benefits under the RUIA may eventually become entitled to a disability annuity under the RRA for the same period that he or she received the RUIA benefits. In such an instance an overpayment of benefits under the RUIA is created since section 4(a-1)(ii) of the RUIA (45 U.S.C. 354(a-1)(ii)) prohibits the payment of benefits under that statute for any period in which the employee is also receiving benefits under the RRA. In such an instance the Board usually recovers the overpaid benefits under the RUIA from the accrual of benefits under the RRA. The proposed rule provided that where the overpayment of benefits under the RUIA may be recovered in such a manner there shall be no right to waiver by the overpaid employee. In such a case the employee cannot show that recovery of the overpayment will cause financial hardship since no future benefits are being taken away nor is he or she being asked to pay anything out-of-pocket. His or her accrual of benefits under the RRA is simply being reduced to recover the overpayment. No comments were received on these proposed changes.

The Board now proposes to add one more situation in which waiver will not be granted. Proposed § 340.10(e)(4) provides that waiver will not be granted to the extent that the overpaid individual is due a retroactive accrual payment from any Federal government agency. The Board considers recovery in such cases to be neither contrary to the purpose of the RUIA nor against equity and good conscience. Accordingly, waiver of recovery would not be appropriate. Of course, in instances in which the overpayment exceeds the accrual, the employee would be able to request waiver of the remaining overpayment subject to the provisions of § 320.11. In addition, any accrual of benefits payable by the United States is considered in determining whether the employee is financially able to repay the

overpayment (see proposed § 340.10(e)(b)).

The Board invites comments on this new proposal as well as comments on the previously published proposed changes to part 340 (54 FR 25877, June 20, 1989).

In addition, the Board proposes to amend § 340.7 to make it clear that all overpayments, even those waived under this part, are still deducted from any residual lump sum death payment under the Railroad Retirement Act. Section 340.8 is proposed to be revised to clarify when recovery by actuarial adjustment is effective to recover an overpayment. Finally, § 340.10 is proposed to be revised by changing the word "and" in the phrase "equity and good conscience" to "or" to conform to the language in the RUIA.

The Board has determined that this is not a major rule for purposes of Executive Order 12291. Therefore, no regulatory impact analysis is required by the Regulatory Flexibility Act (5 U.S.C. 601-611). In addition, no requirements for the collection of information within the meaning of the Paperwork Reduction Act of 1980 are imposed.

List of Subjects in 20 CFR Part 340

Railroad employees, Railroad unemployment insurance.

For the reasons set out in the preamble, title 20, chapter II of the Code of Federal Regulations is proposed to be amended as follows:

PART 340—RECOVERY OF BENEFITS

1. The authority for part 340 continues to read as follows:

Authority: 45 U.S.C. 362(l).

2. Section 340.7 is revised to read as follows:

§ 340.7 Deduction in computation of death benefit.

In computing the residual lump sum provided for in part 234, subpart D, of this chapter, the Board shall include in the benefits to be deducted from the gross residual all amounts recoverable under this part, but not recovered, including amounts where recovery was waived, that were paid to the individual or paid to others as benefits accrued to the individual but not paid at death.

3. Section 340.8 is revised to read as follows:

§ 340.8 Recovery by adjustment in connection with subsequent payments under the Railroad Retirement Act.

Recovery under this part may be made by permanently reducing the amount of any annuity payable to the

overpaid individual (or an individual receiving an annuity based upon the same compensation record as that of the overpaid individual) under the Railroad Retirement Act. This method of recovery is called an actuarial adjustment of the annuity. The Board cannot require any individual to take an actuarial adjustment in order to recover an overpayment nor is an actuarial adjustment available as a matter of right. An actuarial adjustment does not become effective until the overpaid individual negotiates the first annuity check which reflects the annuity rate after actuarial adjustment. *Example.* An individual agrees to recovery of a \$5,000 overpayment made to him by actuarial adjustment to an annuity awarded him under the Railroad Retirement Act. However, he dies before negotiating the first annuity check reflecting his actuarially reduced rate. The \$5,000 is not considered recovered.

§ 340.10 Waiver of recovery of erroneous payments.

* * * * *

4. Section 340.10 is amended by revising paragraphs (c)(3), (d), and (e), to read as follows:

(c) * * *

(3) For purposes of this section, resources include, but are not limited to, liquid assets such as cash on hand, the value of stocks, bonds, savings, accounts, mutual funds, any accrual benefit payable by the United States of America or any other source.

* * * * *

(d) When recovery is against equity or good conscience. Recovery is considered to be against equity or good conscience when a person, in reliance on such payments or on notice that such payment would be made, relinquished a valuable right or changed his or her position for the worse.

(e) Recoveries not subject to waiver.

(1) Where an amount is recoverable pursuant to section 2(f) of the Act from remuneration payable to an employee by a person or company, or where a lien for reimbursement of sickness benefits has arisen pursuant to section 12(o) of the Act, and in either case recovery is sought from a person other than the employee, no right to waiver of recovery exists.

(2) Where the amount recoverable is equal to or less than 10 times the current maximum daily benefit rate under the Railroad Unemployment Insurance Act it shall not be considered contrary to the purpose of the Act or against equity or good conscience to recover such payment. Consequently, the amount

recoverable is not subject to waiver under this part.

(3) Where the amount recoverable is the result of an overpayment of benefits payable under the Railroad Unemployment Insurance Act due to entitlement to annuities under the Railroad Retirement Act for the same days for which benefits were payable, and recovery of such overpayment may be made by offset against an accrual of the annuities, it shall not be considered contrary to the purpose of the Act or against equity or good conscience to recover the erroneous payment by offset against such accrual. Consequently, the amount recoverable is not subject to waiver under this part.

(4) Where there exists accumulated Federal benefits payable by any executive agency of the United States of America, such amounts are not subject to waiver. Any amount of overpayment which is greater than the identified accumulated Federal benefits may be considered for waiver in accordance with applicable provisions.

Dated: July 8, 1991.

By authority of the Board.

Beatrice Ezerski,

Secretary to the Board.

[FR Doc. 91-16990 Filed 7-16-91; 8:45 am]

BILLING CODE 7905-01-M

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[INTL-0029-91]

RIN 1545-AP70

Computation and Characterization of Income and Earnings and Profits Under the Dollar Approximate Separate Transactions Method of Accounting (DASTM)

AGENCY: Internal Revenue Service, Treasury.

ACTION: Notice of proposed rulemaking.

SUMMARY: This document contains proposed Income Tax Regulations relating to the computation and characterization of income and earnings and profits under the dollar approximate separate transactions method of accounting (DASTM). This action is necessary because of the special problems involved in determining income and earnings and profits for businesses that operate in hyperinflationary environments. These regulations would affect those businesses that use DASTM.

DATES: Written comments must be received by September 16, 1991.

Requests to speak (with outlines of oral comments) at a public hearing scheduled for September 13, 1991, must be received by August 30, 1991. See notice of public hearing published elsewhere in this issue of the *Federal Register*.

ADDRESSES: Send comments to: Internal Revenue Service, P.O. Box 7804, Ben Franklin Station, Attention: CC:CORP:T.R (INTL-29-91), room 5228, Washington, DC 20044.

FOR FURTHER INFORMATION CONTACT: Robert Katcher of the Office of Associate Chief Counsel, Internal Revenue Service, 1111 Constitution Avenue, NW., Washington, DC 20224, Attention: CC:CORP:T.R (INTL-29-91) (202-566-6795, not a toll-free call).

SUPPLEMENTARY INFORMATION:

Background

This document contains proposed amendments to the Income Tax Regulations (26 CFR part 1) under sections 904, 954, and 985 of the Internal Revenue Code of 1986. These regulations are proposed to revise existing §§ 1.904-4(j), 1.954-2T(g), and 1.985-3(d).

Explanations of Provisions

A. Overview

Section 985(b)(3) provides that a qualified business unit (QBU) with a functional currency other than the United States dollar (dollar) may, to the extent provided in regulations, elect to use the dollar as its functional currency. The current regulations under § 1.985-2 generally provide that the election is available to a QBU that operates in a hyperinflationary environment. A QBU that uses the dollar as its functional currency under § 1.985-2 must generally compute its income or earnings and profits under the dollar approximate separate transactions method of accounting (DASTM) described in § 1.985-3.

Under DASTM, a taxpayer first prepares an income or loss statement in local currency. The statement is then adjusted to conform to U.S. tax principles. The local currency amounts on the adjusted statement are then translated into dollars. Generally, the translation rate used is the average exchange rate for the month to which the items on the income or loss statement relate. Certain items, such as amounts representing allowances for depreciation, are translated at the average exchange rate for the month in which the cost of the underlying asset was incurred. Finally, the dollar amount

of income or loss is adjusted to reflect currency gain or loss.

Generally, currency gain or loss is calculated under § 1.985-3(d) by determining the change in the net worth (in dollars) of a QBU from the beginning to the end of a taxable year.

Adjustments are required for transactions during the year that affect net worth but do not affect income or earnings and profits, such as capital contributions. The amount of the change in net worth less the dollar income (or plus the dollar loss) computed under § 1.985-3(b) equals the amount of currency gain or loss. The dollar net worth for a taxable year equals the dollar amount of balance sheet assets less the dollar amount of balance sheet liabilities. Generally, the dollar amount of an item (an asset or a liability) is determined by translating the amount of the item reflected on a local currency balance sheet (adjusted to conform to U.S. tax principles) at the average exchange rate for the month in which the cost or amount of the item was incurred.

Under section 954(c)(1)(D), exchange gains and losses must be taken into account in determining the subpart F income of a controlled foreign corporation (CFC). If a CFC uses DASTM, current temporary regulation § 1.954-2T(g)(2) generally provides that the amount of currency gain or loss determined under DASTM must be allocated between subpart F income and non-subpart F income according to the ratios of gross subpart F income and non-subpart F income to total income. This was the general rule in regulation § 1.952-2(c)(2)(v)(a) that was applicable under prior law.

Under section 904(d), a taxpayer is required to compute a separate foreign tax credit limitation for income in each separate limitation category described in section 904(d)(1)(A). Under current regulation § 1.904-4(j), the amount of currency gain or loss determined under DASTM is generally allocated among the separate limitation categories of income on the basis of foreign source gross income in each category.

B. Reasons for Change

Taxpayers have commented on two aspects of DASTM. First, they commented that DASTM results in an incorrect amount of income and earnings and profits. Second, they stated that the current method under DASTM for allocating the amount of currency gain or loss (*i.e.*, gross-to-gross) was inappropriate.

Generally, under DASTM a QBU's income for a taxable year (after making

adjustments for transactions during the year that affect net worth but do not affect income or earnings and profits) equals the change in its net worth. Under U.S. tax principles, gain or loss is generally realized upon the sale or other disposition of property. The current DASTM regulations implement this principle, in part, by providing that the dollar amount of a balance sheet item is not revalued until there is a sale or other disposition of the item. For example, assume during 1990 a calendar year DASTM taxpayer lent 10,000 local currency units when the 10,000 units were worth \$1000. Because of local inflation, interest on the loan was extremely high. On December 31, 1990, the value of 10,000 local currency units had declined to \$600. The loan was repaid on January 1, 1991, when the units were still worth \$600. Under DASTM, the \$400 loss on the loan principal would not be realized until 1991 even though the interest income, usually foreign personal holding company subpart F income (FPHCI), earned during 1990 would be included in income that year. Taxpayers noted that while these timing differences are tolerable in environments where hyperinflation is absent, they create inequitable distortions in a hyperinflationary environment. Similar distortions may occur with respect to a liability (*i.e.*, high interest expense incurred during the term of a loan is not offset with currency gain attributable to devaluation of principal until the loan matures).

Taxpayers suggested that income and earnings and profits distortions could be reduced by taking into account each year the currency gain and loss that accrues on financial assets and liabilities during the year. This could be accomplished by translating these assets and liabilities at a year end rate. If this rule were applied in the example above, the \$400 loss on the loan principal would be realized in 1990 through the use of DASTM. Use of a year end exchange rate would also be consistent with U.S. generally accepted accounting principles (GAAP).

Taxpayers also noted that the gross-to-gross allocation of the DASTM currency loss further distorted their subpart F income because an insufficient amount of the loss was allocated against interest income. Taxpayers argued that DASTM gain or loss consists in large part of the net amount of currency loss on financial assets and currency gain on financial liabilities. Thus, if there were a DASTM loss they urged that it be traced to the income from those assets (generally

interest income) and not to any other income.

After carefully considering taxpayer comments regarding DASTM, it was determined that computing income or loss using a hyperinflationary functional currency could also result in substantial distortions.

C. Explanation of Proposed Changes

To address the problem caused by using a hyperinflationary functional currency, new § 1.985-1(b)(7) is proposed under the authority granted the Secretary in sections 985(a) and 989(b). Proposed regulations § 1.985-1(b)(7) requires a QBU to use the U.S. dollar as its functional currency if the QBU currently uses or could have used a hyperinflationary currency as its functional currency. The Service is studying, as an alternative to requiring DASTM for a QBU operating in a hyperinflationary environment, recharacterizing a portion of the QBU's interest expense (but not its interest income) as principal under the authority of section 989(c)(3). This treatment could be implemented in regulations under sections 986 and 987.

The proposed regulations address the two issues of income measurement under DASTM and the allocation of the currency gain and loss computed under DASTM. These issues are reflected in proposed changes to § 1.985-3. In addition, changes are proposed to conform DASTM more closely with GAAP. Other changes of a technical nature are made to clarify the operation of DASTM. While the changes are effective for taxable years beginning after [Date 30 days after final regulations are published in the *Federal Register*], taxpayers can choose to apply the rules to all open taxable years beginning after 1986, provided they are applied to all parties related to the taxpayer that use DASTM.

Section 1.985-3(b)(2) of the current regulations provides that the local currency income or loss statement of a QBU must be adjusted to conform to U.S. accounting and tax principles. Certain sections of the Code are mentioned for illustration purposes. Proposed regulation § 1.985-3(b)(2) provides simply that the income or loss statement must be adjusted to conform to U.S. tax principles, which includes all tax accounting principles and, in the case of a controlled foreign corporation, the materiality standard under section 964.

Under § 1.985-3(c) of the current regulations certain local currency amounts reflected on the adjusted income or loss statement of a QBU must be translated at the average exchange

rate for the translation period (usually a month). Section 1.985-3(c)(6) generally defines the average exchange rate as the average of the daily exchange rates within the translation period. Proposed § 1.985-3(c) replaces "average exchange rate" whenever the term is used with "exchange rate". Proposed § 1.985-3(c)(6) defines "exchange rate" to be any reasonable rate attributable to a translation period. The method for determining an exchange rate for a period (such as the average rate for the period) must be applied consistently from period to period and cannot be changed without the Commissioner's consent. This change enables taxpayers to use an exchange rate for a translation period that is consistent with the rate they use for GAAP.

Section 1.985-3(d) of the current regulations provides rules for determining DASTM gain or loss. Paragraph (d)(5) of the regulations provides rules for translating balance sheet items into dollars to determine changes in the dollar net worth of a QBU. In order to address concerns about the proper measurement of income and earnings and profits in a hyperinflationary environment, the proposed regulations alter the translation rules for debt obligations, including accounts receivable and payable. Under proposed § 1.985-3(d)(5)(vi), these balance sheet items must be translated at the exchange rate for the last translation period for the taxable year.

Changes to the translation rules for other balance sheet items in § 1.985-3(d)(5) of the current regulations are proposed to allow taxpayers greater flexibility to conform tax rules to GAAP. The translation rate for accrued taxes provided in § 1.985-3(d)(5)(vii) is changed from the average rate for the translation period to which the taxes relate (the last translation period of the taxable year) to the year-end exchange rate. This conforms the DASTM rule for translating accrued taxes to the rule under § 1.905-3T(b), relating to foreign tax redeterminations. Current regulations § 1.985-3(d)(2)(ii) generally provides that foreign income taxes of a QBU branch that are credited under section 901 are added back to the net worth of the QBU. This rule was intended to remind DASTM taxpayers to apply the principles of section 275(a)(4). Generally, that section provides that a taxpayer cannot deduct taxes that it credits. The language has been deleted because its literal application may have distorted income (including currency gain or loss) when applied to the payment of foreign taxes

that were accrued in an earlier year. The DASTM rule will be coordinated with the treatment of accrued foreign income tax liabilities under final section 988 regulations.

The proposed regulations add a new § 1.985-3(e) that provides rules for determining the impact of DASTM gain or loss on gross income, taxable income, and earnings and profits. This new paragraph (e) recognizes that DASTM gain or loss generally results from combining, through the net worth calculation, the amount of currency gain or loss on assets with the amount of currency gain or loss on liabilities. Paragraph (e) provides a methodology for separating and allocating the amount of DASTM gain or loss on both assets and liabilities.

The amount attributable to assets is generally allocated to the income produced by the asset. Thus, for example, that portion of the currency loss generated by interest-bearing assets will generally be allocated to the interest income produced by those assets. Similarly, currency loss generated by accounts receivable from sales that produced general limitation non-subpart F income will generally be allocated to that income.

The amount of currency gain or loss attributable to liabilities is generally allocated to income in the same manner as interest expense. This is based on the approach that, in general, money is fungible and that currency gain or loss from a liability is attributable to all activities and property of the QBU regardless of any specific purpose for incurring the liability.

The following is a summary of the steps used in paragraph (e) for determining and allocating the portion of the DASTM gain and loss from each type of asset and from liabilities. Generally, the currency gain or loss on assets and liabilities is computed for each balance sheet period (at least quarterly). Currency gain or loss on assets is allocated to assets that produce that gain or loss. Currency gain or loss on liabilities is allocated and apportioned in the same manner the taxpayer allocates and apportions interest expense.

Step 1 requires the preparation of opening and closing balance sheets for the QBU for each balance sheet period during the taxable year. It is the Service's understanding that monthly balance sheets are normally prepared for financial purposes in these environments and, thus, it is anticipated that monthly balance sheets will ordinarily be required.

Under Steps 2 and 3, a taxpayer must identify certain section 988 assets and

liabilities that would be translated using the exchange rate for the last translation period for the taxable year. Then the taxpayer must identify the source and type of income those assets produce.

Under Steps 4 and 5, the taxpayer determines the currency gain or loss on the assets by taking the average of their adjusted bases at the beginning and end of the balance sheet period and translating that average into dollars by the change in the beginning and the ending local currency/dollar exchange rate during the period. The amount of that currency gain or loss adjusts the dollar income from the assets.

Under Steps 6 and 7, the taxpayer determines the currency gain or loss on the liabilities by taking the average amount of the liabilities at the beginning and end of the balance sheet period and translating that average into dollars by the change in the ending and beginning local currency/dollar exchange rate during the period. The amount of that gain or loss is allocated and apportioned in the same manner as interest expense. In the case of a QBU branch, only the assets or gross income of the QBU branch are taken into account.

Under Step 8, the amount of any difference between the DASTM gain or loss and the net amount of currency gain or loss determined under Steps 1-7 is allocated pro rata among all of the QBU's gross income.

The Service is interested in hearing whether there should be an alternative to the eight step process for allocating DASTM gain or loss. When making suggestions, taxpayers are encouraged to explain why the alternative is consistent with the composition of the DASTM gain or loss, what class of taxpayers should be eligible to use it, and whether the use of the alternative would be binding in future years. One alternative considered in developing these proposed regulations was, generally, to allow taxpayers to allocate a DASTM loss to interest income and a DASTM gain to interest expense. Any alternative method adopted will be tailored to minimize opportunities to misallocate DASTM gain or loss, for example, the allocation of DASTM loss with respect to assets that produce general limitation income to passive income.

Special Analyses

It has been determined that these proposed rules are not major rules as defined in Executive Order 12291. Therefore, a Regulatory Impact Analysis is not required. It has also been determined that section 553(b) of the Administrative Procedure Act (5 U.S.C. chapter 5) and the Regulatory Flexibility

Act (6 U.S.C. chapter 6) do not apply to these regulations, and, therefore, an initial Regulatory Flexibility Analysis is not required. Pursuant to section 7805(f) of the Internal Revenue Code, these regulations will be submitted to the Chief Counsel for Advocacy of the Small Business Administration for comment on their impact on small business.

Comments and Request for a Public Hearing

Before adopting these proposed regulations, consideration will be given to any written comments that are submitted (preferably a signed original and eight copies) to the Commissioner of Internal Revenue. All comments will be available for public inspection and copying. A public hearing will be held on September 13, 1991. See notice of hearing published elsewhere in this issue of the *Federal Register*.

Drafting Information

The principal author of these regulations is Robert Katcher of the Office of Associate Chief Counsel (International) within the Office of Chief Counsel, Internal Revenue Service and Treasury Department participated in developing the regulations.

List of Subjects

26 CFR 1.901-1 through 1.901(f)-1A

Income taxes, Reporting and recordkeeping requirements, United States investments abroad.

26 CFR 1.951-1 through 1.964-5

Income taxes, Reporting and recordkeeping requirements, United States investments abroad.

26 CFR 1.985-0 through 1.989(c)-1T

Income taxes, Reporting and recordkeeping requirements.

Proposed amendments to the regulations

Accordingly, 26 CFR part 1 is proposed to be amended as follows:

PART 1—INCOME TAX; TAXABLE YEARS BEGINNING AFTER DECEMBER 31, 1953

Paragraph 1. The authority for part 1 continues to read in part:

Authority: 26 U.S.C. 7805 * * *

Par. 2. Section 1.904-4(j) is revised to read as follows:

§ 1.904-4 Separate application of section 904 with respect to certain categories of income.

* * * * *
(j) Special rule for DASTM gain or loss. Any DASTM gain or loss computed

under § 1.985-3(d) must be allocated among categories of income under the rules of § 1.985-3(e)).

* * * * *

Par. 3. Section 1.954-2T(g)(2)(i) is revised to read as follows:

§ 1.954-2T Foreign Personal Holding Company Income; taxable years beginning after December 31, 1986 (temporary).

(g) * * *

(2) * * *

(i) *Qualified business units using the dollar approximate separate transactions method.* Any DASTM gain and loss computed under § 1.985-3(d) must be allocated to foreign personal holding company income under the rules of § 1.985-3(e).

* * * * *

Par. 4. Section 1.985-0 is amended by revising the entry for § 1.985-3 to read as follows:

§ 1.985-0 Outline of regulations.

* * * * *

§ 1.985-3 United States dollar approximate separate transactions method.

- (a) Scope and effective date.
- (b) In general.
- (c) Translation into United States dollars.
- (d) DASTM gain or loss.
- (e) Impact of DASTM gain or loss or gross income, taxable income, and earnings and profits.

* * * * *

Par. 5. Section 1.985-1 is amended as follows:

1. Revise the fifth sentence of paragraph (a)(1).
2. Revise paragraph (b)(4).
3. Remove the word "or" at the end of paragraph (b)(5).
4. Add the word "or" at the end of paragraph (b)(6).
5. Add a new paragraph (b)(7).
6. Revise the flush materials at the end of paragraph (d)(1).
7. The revisions and additions read as follows.

§ 1.985-1 Functional currency.

(a) * * * Section 1.985-3 sets forth the dollar approximate separate transactions method that certain QBUs must use to compute their income or loss or earnings and profits. * * *

(b) * * *

(4) For taxable years ending before [Date 31 days after final regulations are published in the Federal Register], a QBU that elects to use, or is otherwise required to use, the dollar as its functional currency under § 1.985-2;

(7) For taxable years beginning after [Date 30 days after final regulations are published in the Federal Register], any QBU that could have used a hyperinflationary currency as its functional currency absent this paragraph (b)(7). If a QBU is required to change its functional currency under this paragraph (b)(7), for purposes of § 1.985-4 the change (including a change in functional currency made for all open years under § 1.985-3(a)) is considered to be made with the consent of the Commissioner. A QBU changing functional currency under this paragraph (b)(7) must make the adjustments described in § 1.985-5T if the year of change (as defined in § 1.481-1(a)(1)) begins after 1987, or the adjustments described in § 1.985-6T if the year of change begins in 1987. The adjustments described in § 1.985-5T must be included in income in the taxable year prior to the year of change unless that prior taxable year is closed. In that case, the adjustments must be included in income in the year of change. No adjustments under section 481 are required solely because of a change in functional currency required by this paragraph (b)(7).

* * * * *

(d) *Single functional currency for a foreign corporation.* * * *

(1) * * *

For purposes of this paragraph (d)(1), if a QBU of a foreign corporation has the dollar as its functional currency under paragraph (b)(4) or (b)(7) of this section, the QBU's activities shall be considered dollar activities of the corporation.

* * * * *

Par. 6. Section 1.985-2 is amended by adding a new first sentence in paragraph (a) to read as follows.

§ 1.985-2 Election to use the United States dollar as the functional currency of a QBU.

(a) *Background and scope.* Except for paragraph (b)(2) of this section, § 1.985-2 is not effective for taxable years beginning after [Date 30 days after final regulations are published in the Federal Register]. * * *

* * * * *

Par. 7. Section 1.985-3 is revised to read as follows:

§ 1.985-3 United States dollar approximate separate transactions method.

(a) *Scope and effective date.* This section describes the United States dollar (dollar) approximate separate transactions method of accounting (DASTM). This method of accounting must be used to compute income or loss or earnings and profits (of deficit in earnings and profits) of a QBU (as

defined in section 989(a) of the Code) that has the dollar as its functional currency pursuant to § 1.985-1(b)(7) or § 1.985-2. This section is effective for taxable years beginning after [Date 30 days after final regulations are published in the Federal Register.] However a taxpayer may choose to apply this section to all open taxable years beginning after December 31, 1986, provided each person that is related (within the meaning of § 1.985-2(d)(3)) to the taxpayer and that uses DASTM also applies these rules.

(b) *In general.* Under DASTM, income or loss or earnings and profits (or deficit in earnings and profits) of a QBU for its taxable year shall be determined in dollars by—

(1) Preparing an income or loss statement from the QBU's books and records (within the meaning of § 1.989(a)-(1)(d)) as recorded in the QBU's hyperinflationary currency (as described in § 1.985-2(b)(1));

(2) Making the adjustments necessary to conform such statement to United States tax principles;

(3) Translating the amounts of hyperinflationary currency as shown on such adjusted statement into dollars in accordance with paragraph (c) of this section; and

(4) Adjusting the resulting dollar income or loss or earnings and profits (or deficit in earnings and profits) in accordance with paragraph (d) of this section to reflect the amount of DASTM gain or loss as determined thereunder.

(c) *Translation into United States dollars—(1) In general.* Except as provided in paragraphs (c)(2), (3), (4), (5), and (8) of this section, and § 1.985-5T, the amounts shown on the income or loss statement, as adjusted under paragraph (b)(2) of this section, shall be translated into dollars at the exchange rate (as defined in paragraph (c)(6) of this section) for the translation period (as defined in paragraph (c)(7) of this section) to which they relate.

(2) *Cost of goods sold.* The dollar value of cost of goods sold shall equal the sum of the dollar values of beginning inventory and purchases less the dollar value of ending inventory as these amounts are determined under paragraph (c)(3) of this section.

(3) *Beginning inventory, purchases, and closing inventory—(i) Beginning inventory.* Amounts representing beginning inventory shall be translated so as to obtain the same amount of dollars which represented such items in the closing inventory balance for the preceding taxable year.

(ii) *Purchases.* Amounts representing items purchased or otherwise first

included in inventory during the taxable year shall be translated at the exchange rate for the translation period in which the cost of such items was incurred.

(iii) *Closing inventory—(A) In general.* Amounts representing items included in the closing inventory balance shall be translated at the exchange rate for the translation period in which the cost of such items was incurred. However, if amounts representing items included in closing inventory balance are either valued at market or written down to market value, they shall be translated at the exchange rate existing on the last day of the taxable year. For purposes of determining lower of cost or market, items of inventory included in the closing inventory balance shall be translated into dollars at the exchange rate for the translation period in which the cost of such items was incurred and compared with market as determined in the QBU's hyperinflationary currency translated into dollars at the exchange rate existing on the last day of the taxable year.

(B) *Determination of translation period.* The method used to determine the translation period of amounts representing items of closing inventory for purposes of paragraph (c)(2)(iii)(A) of this section may be based upon reasonable approximations and averages, including rates of turnover, provided the method is consistently used from year to year.

(4) *Depreciation, depletion, and amortization.* Amounts representing allowances for depreciation, depletion, or amortization shall be translated at the exchange rate for the translation period in which the cost of the underlying asset was incurred.

(5) *Prepaid expenses or income.* Amounts representing expense or income paid or received in a prior

taxable year shall be translated at the exchange rate for the translation period during which they were paid or received.

(6) *Exchange rate.* The exchange rate for a translation period may be determined under any reasonable method (e.g., average of beginning and ending exchange rates for the period) provided it is consistently applied to all translation periods and clearly reflects income. Once chosen, a method for determining an exchange rate can be changed only with the consent of the Commissioner.

(7) *Translation period—(i) In general.* Except as provided in paragraph (c)(3)(iii)(B) and paragraph (c)(7)(ii) of this section, a translation period shall be each month within a QBU's taxable year.

(ii) *Election.* A QBU may elect to divide its taxable year into translation periods that are less than one month. The election is made if the QBU computes its income or loss or earnings and profits (or deficit in earnings and profits) using translation periods that are less than one month. The translation period elected may not be changed without the consent of the district director.

(8) *Dollar transactions.* Notwithstanding any other provisions of this section, no currency gain or loss is realized with respect to dollar transactions since the dollar is the functional currency of the QBU. Thus, the amount of any payment or receipt of dollars shall be reflected in the income or loss statement by the amount of such dollars. Also, the income or loss attributable to any transaction in which the amount that a QBU is entitled to receive (or is required to pay) by reason of such transaction is either denominated in terms of the dollar or is

determined by reference to the value of the dollar, must be computed transaction-by-transaction. For example, if a foreign corporation lends 20 LC when 20 LC=\$20 and is entitled to receive the LC equivalent of \$20 at maturity plus a market rate of interest, the loan is a dollar transaction. Similarly, this paragraph applies to any transaction that is determined to be a dollar transaction under section 988.

(9) *Examples.* The provisions of this paragraph (c) are illustrated by the following examples.

Example 1. S is an accrual basis eligible QBU that makes a dollar election for its first taxable year beginning in 1987. S's hyperinflationary currency is the "h". During 1987 S received 100 dollars attributable to sales. Because this is a dollar transaction under paragraph (c)(8) of this section, S's income or loss for 1987 shall reflect the 100 dollars (not the hyperinflationary value of such dollars when accrued). If 120 British pounds were received rather than 100 dollars, S's income or loss would reflect the "h" amount (as determined under section 988) of the 120 British pounds translated into dollars at the average rate for the appropriate translation period.

Example 2. S is an accrual basis eligible QBU that makes the dollar election for its first taxable year beginning in 1987. S's hyperinflationary currency is the "h". During 1987, S's sales amounted to 240,000,000h, its currently deductible expenses were 26,000,000h, and its total inventory purchases amounted to 100,000,000h. During January and February of 1987, S purchased depreciable assets for 80,000,000h and was allowed depreciation of 4,000,000h. At the end of 1987, S's closing inventory was 23,000,000h. No election to use a translation period other than the month is made, S had no transactions described in paragraph (c)(8) of this section, and S's closing inventory was computed on the first-in, first-out inventory method. S's adjusted income or loss statement for 1987 is translated into dollars as follows:

	Hyperinflatory currency	Exchange rate	United States dollars
Sales:			
January–February	10,000,000h	1:20:1	\$500,000
March–April	20,000,000	21:1	952,381
May–June	50,000,000	22:1	2,272,727
July	50,000,000	23:1	2,173,913
August	20,000,000	26:1	769,231
September	20,000,000	28:1	714,286
October	20,000,000	29:1	689,655
November	20,000,000	30:1	666,667
December	30,000,000	31:1	967,742
Total sales	240,000,000h		9,706,602
Cost of Goods Sold:			
Opening Inventory	0		0
Purchases:			
January–February	15,000,000h	20:1	\$750,000
March–April	10,000,000	21:1	476,190
May–June	30,000,000	22:1	1,363,636
July	20,000,000	23:1	869,565
August	10,000,000	26:1	384,615

	Hyperinflationary currency	Exchange rate	United States dollars
September.....	5,000,000	28:1	178,571
October.....	5,000,000	29:1	172,414
November.....	2,500,000	30:1	83,333
December.....	2,500,000	31:1	80,645
Less closing inventory.....	(23,000,000)	(^a)	(822,655)
Total.....	77,000,000h		3,536,314
Non-Capitalized Expense:			
January–February.....	4,000,000h	20:1	\$200,000
March–April.....	2,500,000	21:1	119,048
May–June.....	2,500,000	22:1	113,636
July.....	2,000,000	23:1	86,957
August.....	3,000,000	26:1	115,385
September.....	3,000,000	28:1	107,143
October.....	2,000,000	29:1	68,966
November.....	3,000,000	30:1	100,000
December.....	4,000,000	31:1	129,032
Total.....	26,000,000h		1,040,167
Depreciation.....	4,000,000h	20:1	200,000
Total cost and expense.....	107,000,000h		4,776,481
Operating profit.....	133,000,000h		4,930,121

^a The average exchange rate for each month is the same.^b Since S uses the first-in, first-out inventory method, the closing inventory is assumed in normal circumstances to consist of purchases made during the most recent translation period as follows:

	Hyperinflationary currency	Exchange rate	United States dollars
December.....	2,500,000h	31:1	\$80,645
November.....	2,500,000	30:1	83,333
October.....	5,000,000	29:1	172,414
September.....	5,000,000	28:1	178,571
August.....	8,000,000	26:1	307,892
Total.....	23,000,000h		822,655

(d) *DASTM gain or loss—(1)**Computing DASTM gain or loss.*

DASTM gain or loss of a QBU shall be the amount which equals—

(i) The net worth for the taxable year as determined under paragraph (d)(2) of this section; plus

(ii) The dollar amount of any item that decreased net worth for the taxable year but does not generally affect income or loss or earnings and profits (or deficit in earnings and profits for the taxable year ("additions"), such as transfers to the home office of a QBU branch, dividends, and returns of capital. The amount of a dividend or return of capital shall be translated on the date the amount is paid or accrued. The amount of any other additions shall be translated by applying the principles of paragraph (c) of this section; minus

(iii) The net worth for the preceding taxable year as determined under paragraph (d)(2) of the section; minus

(iv) The amount of dollar income or earnings and profits (or plus the amount of any dollar loss or deficit in earnings and profits) as determined for the taxable year pursuant to paragraphs (b)(1) through (b)(3) of this section; minus

(v) The dollar amount of any item that increased net worth for the taxable year but does not generally affect income or loss or earnings and profits (or deficit in earnings and profits) for the taxable year ("subtractions"), such as capital contributions or transfers from the home office to a QBU branch. The amount of a capital contribution shall be translated on the date the contribution is made. The amount of any other subtractions shall be translated by applying the principles of paragraph (c) of this section.

(2) *Net worth.* Net worth for any taxable year shall be the dollar amount equal to the aggregate dollar amount representing assets on the balance sheet as adjusted and translated under this paragraph (d)(2) (ii) and (iii)) less the aggregate dollar amount representing liabilities on the balance sheet (as adjusted and translated under this paragraph (d)(2) (ii) and (iii)). Net worth shall be determined by first—

(i) Preparing a balance sheet as of the end of such year from the QBU's books and records (within the meaning of section 989(a)) as recorded in the QBU's hyperinflationary currency;

(ii) Making adjustments necessary to conform such balance sheet to United States tax principles; and

(iii) Translating the asset and liability amounts shown on the balance sheet into United States dollars in accordance with paragraph (d)(3) of this section.

Notwithstanding any other provision in this paragraph (d)(2), the district director may adjust the amount of any asset or liability if a purpose for obtaining (or disposing of) the asset or incurring (or discharging) the liability is to manipulate the composition of the balance sheet for any period during the taxable year.

(3) *Translation of balance sheet.*

Except as otherwise provided in § 1.985-5T, asset and liability amounts shown on the balance sheet in hyperinflationary currency (adjusted pursuant to paragraph (d)(2)(ii) of this section) shall be translated into dollars as follows:

(i) *Inventory.* Amounts representing items of inventory included in the closing inventory balance sheet shall be translated in accordance with paragraph (c)(3)(iii) of this section.

(ii) *Bad debt reserves.* Amounts representing bad debt reserves shall be translated at the exchange rate for the last translation period for the taxable year.

(iii) *Prepaid income or expense.* Amounts representing expenses or income paid or received in a prior taxable year shall be translated in accordance with paragraph (c)(5) of this section.

(iv) *Currency other than the dollar.* Amounts representing currency (other than the dollar) on hand shall be translated at the exchange rate for the last translation period of the taxable year.

(v) *Certain assets—(A) In general.* Amounts representing plant, real property, equipment, goodwill, patents, and other intangibles shall be translated at the exchange rate for the translation period in which the cost of the asset was incurred.

(B) *Adjustment to certain assets.* Amounts representing depreciation, depletion, and amortization reserves shall be translated in accordance with paragraph (c)(4) of this section.

(vi) *Debt obligations.* Except as provided in paragraph (d)(3)(vii) of this section, amounts representing any debt obligation (including accounts

receivable and payable) shall be translated at the exchange rate for the last translation period for the taxable year.

(vii) *Accrued foreign income taxes.*

Amounts representing an accrued foreign income tax shall be translated at the year-end exchange rate.

(viii) *Certain financial instruments.*

Amounts representing any item described in section 988(c)(1)(B)(iii), relating to forward contracts, futures contracts, options, or similar financial instruments, shall be translated at the exchange rate for the last translation period for the taxable year.

(ix) *Other assets.* Amounts

representing assets other than those described in paragraphs (d)(3)(i) through (viii) of this section shall be translated at the exchange rate for the translation period in which the cost of the asset was incurred.

(4) *Dollar transactions.*

Notwithstanding any other provisions of this paragraph (d), where the amount representing an item shown on the balance sheet reflects a dollar transaction (described in paragraph (c)(8) of this section), the transaction shall be taken into account in accordance with that paragraph.

(5) *Character.* The amount of DASTM gain or loss determined under paragraph (d)(1) of this section shall be ordinary income or loss.

(6) *Example.* The provisions of this paragraph (d) are illustrated by the following example.

Example. S, an accrual method calendar year foreign corporation, uses DASTM. S's hyperinflationary currency is the "h". S's net worth at December 31, 1991 was \$3,246,495. For 1992, S's operating profit is \$1,340,000 or \$2,038,200. S made a 5,000,000h distribution in April and December of 1992. S's translation period is the month. None of S's assets or liabilities reflect a transaction described in paragraph (c)(8) of this section. The exchange rate for each month in 1992 is as follows:

January.....	32h:\$1
Feb.-Mar.....	33:1
April-May.....	34:1
June.....	35:1
July.....	36:1
Aug.-Sept.....	37:1
Oct.....	38:1
Nov.....	39:1
Dec.....	40:1

At the end of 1992, S's assets and liabilities, as adjusted and translated pursuant to this paragraph (d)(4)(ii) and (iii) of this section, are as follows:

	Hyperinflationaly	Exchange rate	U.S. dollar
Hyperinflationary cash on hand.....	40,000h	40:1	\$1,000
Checking account.....	400,000	40:1	10,000
Accounts receivable—30-day accounts	20,000,000	1:40:1	500,000

Hyperinflationary cash on hand.....

Checking account.....

Accounts receivable—30-day accounts

	Hyperinflationary	Exchange rate	U.S. dollar
60-day accounts.....	25,000,000	40:1	625,000
Inventory.....	65,000,000	(*)	2,500,000
Fixed assets—Property.....	90,000,000	27:1	3,333,333
Plant.....	190,000,000	(*)	6,785,714
Accumulated depreciation.....	(600,000)	(*)	(21,428)
Equipment.....	10,000,000	(*)	340,000
Accumulated depreciation.....	(400,000)	(*)	(13,333)
Common Stock—Stock A.....	500,000	34:1	14,706
Stock B.....	400,000	26:1	15,385
Preferred stock.....	1,000,000	32:1	31,250
C.D.'s.....	5,000,000	40:1	125,000
Total assets.....	406,340,000		14,246,627
Accounts payable.....	35,000,000	40:1	875,000
Long-term liabilities:			
Liability A.....	150,000,000	40:1	3,750,000
Liability B.....	80,000,000	40:1	2,000,000
Liability C.....	30,000,000	40:1	750,000
Total liabilities.....	295,000,000h		7,375,000

¹ S ages its accounts receivable and groups them into two categories—those outstanding for 30 days and those outstanding for 60 days.

² Translated the same as closing inventory under paragraph (c)(3)(iii).

³ The cost of S's plant was incurred in several translation periods. Therefore, the dollar cost reflects several translation rates.

⁴ S has a variety of equipment. Therefore, S's dollar basis represents the sum of the hyperinflationary cost of each, translated according to the average exchange rate for the translation period incurred.

The DASTM gain of S for 1992 is computed as follows:

Net worth—1992.....	\$6,871,627
Plus—1992 dividends:	
April.....	\$149,254
December.....	\$ 126,582
	275,836
Less:	
Net worth, 1991.....	3,246,495
Operating Profit, 1992.....	2,038,200
	5,284,695
DASTM gain.....	1,862,768

Thus, total profit=\$2,038,200+\$1,862,768=\$3,900,968.

⁵ The exchange rates on the date of the April and December dividends were 33.5h:\$1 and 39.5h:\$1, respectively.

(e) *Impact of DASTM gain or loss on gross income, taxable income, and earnings and profits.* The amount of DASTM gain or loss of a QBU determined under paragraph (d) of this section is taken into account by the QBU for purposes of determining gross income, taxable income, and earnings and profits under the 8-step procedure described in this paragraph (e).

(1) *Step 1—Prepare balance sheets.* Prepare an opening and a closing balance sheet for the QBU for each balance sheet period during the taxable year. The balance sheet period is the most frequent period for which balance sheet data are reasonably available (but in no event less frequently than quarterly). The balance sheet period may not be changed without the consent of the district director. The balance sheets must be prepared under the

principles of paragraph (d)(2) of this section.

(2) *Step 2—Identification of certain assets and liabilities.* Identify each item described in section 988(c)(1)(B) or (C)(ii) on the balance sheet that would have been translated under paragraph (d)(3) of this section into dollars at the exchange rate for the last translation period for the taxable year (or the year-end rate in the case of an accrued foreign income tax liability).

(3) *Step 3—Characterize the assets.* Characterize and group the assets identified in Step 2 according to the source and the type of income that they generate, have generated, or may reasonably be expected to generate by applying the principles of § 1.861-9T(g)(3) (relating to characterization of assets for purposes of interest expense allocation). If a purpose for a taxpayer's business practices is to manipulate asset characterization or groupings, the district director may allocate or apportion currency gain or loss attributable to the assets. Thus, if a taxpayer that did not separately state interest on accounts receivable begins to impose an interest charge and a purpose for the change was to manipulate tax characterizations or groupings, then the district director may require that none of the currency gain or loss attributable to those receivables be allocated or apportioned to interest income.

(4) *Step 4—Determine currency gain or loss attributable to certain assets—(i) General rule.* The dollar amount of currency gain or loss attributable to assets in each group identified in Step 2 is calculated as follows:

$$[(bb+eb)+2] \times [er-br]$$

where

bb—the adjusted basis of the assets in the group at the beginning of the balance sheet period.

eb—the adjusted basis of the assets in the group at the end of the balance sheet period.

er—the local currency/dollar exchange rate at the end of the balance sheet period.

br—the local currency/dollar exchange rate at the beginning of the balance sheet period.

(ii) *Weighing to prevent distortion.* Where a distortion would result from averaging the adjusted basis at the beginning and end of a balance sheet period, as might be the case in the vent of a purchase or disposition of an asset that is not in the normal course of business, the taxpayer must use a different method that more clearly reflects the average adjusted basis of assets weighted to reflect the time the assets are held by the QBU during the translation period.

(5) *Step 5—Adjustment to dollar income by currency gain or loss from assets.* Adjust the dollar amount of the QBU's gross income (computed under paragraphs (b)(1) through (b)(3) of this section) generated by each group of assets characterized in Step 3 by the amount of the currency gain or loss attributable to those assets computed under Step 4. Thus, if a group of assets, such as accounts receivable, had generated both a category of income described in section 904(d)(1)(I) (relating to general limitation income) that was not foreign base company income as defined in section 954 and a loss under

Step 4, the amount of the loss would reduce the gross amount of the QBU's income in that category. Similarly, if a group of assets, such as short-term bank deposits, generated both foreign personal holding company (described in section 954(c)(1)(A)) and a loss under Step 4, the amount of the loss would reduce the amount of the QBU's foreign personal holding company income.

(6) *Step 6—Determine currency gain or loss attributable to liabilities*—(i) **General rule.** The dollar amount of currency gain or loss attributable to liabilities identified in Step 2 is calculated as follows:

$$[(bl + el) + 2] \times [br - er]$$

where

bl=the amount of liabilities at the beginning of the balance sheet period.

el=the amount of liabilities at the end of the balance sheet translation period.

er=the local currency/dollar exchange rate at the end of the balance sheet period.

br=the local currency/dollar exchange rate at the beginning of the balance sheet period.

(ii) *Weighing to prevent distortion.* Where a distortion would result from averaging the amount of liabilities at the beginning and end of a balance sheet period, as might be the case where a taxpayer incurs or retires a substantial liability, the taxpayer must use a different method that more clearly reflects the average amount of liabilities weighted to reflect the time the liability was outstanding during the balance sheet period.

(7) *Step 7—Adjustment to dollar income by currency gain or loss from liabilities.* After applying Step 5, adjust the dollar amount of the QBU's gross income (computed under paragraphs (b)(1) through (b)(3) of this section) by allocating and apportioning the amount of currency gain or loss on liabilities computed under Step 6 to each income category in the same manner that interest expense is allocated and apportioned (without regard to the exceptions to fungibility in § 1.861–10T). In the case of a QBU branch, a taxpayer that uses an asset method described in § 1.861–9T (g) (or the modified gross income method described in § 861–9T (j)) to allocate and apportion interest expense must take into account only the assets (or gross income) of the QBU branch when allocating and apportioning the currency gain or loss on liabilities.

(8) *Step 8—Treatment of residual DASTM gain or loss.* If there is a difference between the net currency gain or loss determined under Steps 1 through 7 and the DASTM gain or loss

determined under paragraph (d) of this section, the amount of the difference must be allocated to the dollar amount of the QBU's gross income (computed under paragraphs (b)(1) through (b)(3) of this section as adjusted under Steps 1 through 7) on the basis of the relative amounts of gross income in each separate category described in § 1.904–5(a)(1).

Fred T. Goldberg, Jr.,

Commissioner of Internal Revenue.

[FR Doc. 91–16827 Filed 7–16–91; 8:45 am]

BILLING CODE 4830–01–M

1.985–3(d). These regulations appear in the proposed rules section of this issue of the Federal Register.

The rules of § 601.601(a)(3) of the "Statement of Procedural Rules" (26 CFR part 601) shall apply with respect to the public hearing. Persons who have submitted written comments within the time prescribed in the notice of proposed rulemaking and who also desire to present oral comments at the hearing on the proposed regulations should submit not later than Friday, August 30, 1991, an outline of the oral comments/testimony to be presented at the hearing and the time they wish to devote to each subject.

Each speaker (or group of speakers representing a single entity) will be limited to 10 minutes for an oral presentation exclusive of the time consumed by the questions from the panel for the government and answers to these questions.

Because of controlled access restrictions, attendees cannot be admitted beyond the lobby of the Internal Revenue Building until 9:45 a.m.

An agenda showing the scheduling of the speakers will be made after outlines are received from the persons testifying. Copies of the agenda will be available free of charge at the hearing.

By direction of the Commissioner of Internal Revenue.

Dale D. Goode,

Federal Register Liaison Officer, Assistant Chief Counsel (Corporate).

[FR Doc. 91–16828 Filed 7–16–91; 8:45 am]

BILLING CODE 4830–01–M

26 CFR Part 1

[INTL-029-91]

RIN 1545-AP70

Computation and Characterization of Income and Earnings and Profits Under the Dollar Approximate Separate Transactions Method of Accounting (DASTM); Hearing

AGENCY: Internal Revenue Service, Treasury.

ACTION: Notice of public hearing on proposed regulations.

SUMMARY: This document provides notice of a public hearing on proposed income tax regulations relating to the computation and characterization of income and earnings and profits under the dollar approximate separate transactions method of accounting (DASTM).

DATES: The public hearing will be held on Friday, September 13, 1991, beginning at 10 a.m. Requests to speak and outlines of oral comments must be received by Friday, August 30, 1991.

ADDRESSES: The public hearing will be held in the IRS Auditorium, Seventh Floor, 7400 Corridor, Internal Revenue Building, 1111 Constitution Avenue, NW, Washington, DC. Requests to speak and outlines of oral comments should be submitted to the Internal Revenue Service, P.O. Box 7604, Ben Franklin Station, Attn: CC:CORP:T:R [INTL-029-91], room 5228, Washington, DC 20044.

FOR FURTHER INFORMATION CONTACT: Bob Boyer of the Regulations Unit, Assistant Chief Counsel (Corporate), 202-377-9231 (not a toll-free number).

SUPPLEMENTARY INFORMATION: The subject of the public hearing is regulations proposing amendments to the income tax regulations (26 CFR part 1) under sections 904, 954, and 985 of the Internal Revenue Code of 1986. These regulations are proposed to revise existing §§ 1.904–4(j), 1.954–2T(g), and

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 80 and 86

[AMS-FRL-3972-1]

Regulation of Fuels and Fuel Additives: Standards for Highway Diesel Fuel Quality-Sulfur Content; and Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines: Standards for Oxides of Nitrogen Emissions From Heavy-Duty Diesel Engines

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Proposed Rulemaking (NPRM).

SUMMARY: This notice contains EPA's proposed revisions to 40 CFR part 80 pursuant to section 211(i) of the Clean Air Act (CAA) as amended in 1990. The specific revision presented by this

NPRM for part 80 is the requirement that all highway diesel fuel comply with the maximum sulfur content standard of 0.05 percent by weight, effective October 1, 1993. In addition to the preceding statutory required revision, EPA proposes to carryover the existing heavy-duty diesel engine (HDDE) NO_x standard of 5.0 g/BHP-hr to the 1994 through 1997 model years, and to correct a typographical error for the viscosity specification for Type 2-D diesel fuel contained in 40 CFR part 86.

DATES: Comments on this proposal will be accepted until September 3, 1991. EPA will conduct a public hearing on this Notice of Proposed Rulemaking on August 2, 1991. Additional information on the public hearing and the submission of comments can be found under "Public Participation" in the Supplementary Information section of this notice.

ADDRESSES: Interested parties may submit written comments (in duplicate if possible) to Public Docket No. A-90-41 at the address given below. The public hearing will be held at EPA's Motor Vehicle Emission Laboratory, 2565 Plymouth Rd., Ann Arbor, MI. The public hearing will begin at 10 a.m. and will continue until such time as all testimony has been presented. The hearing will be recorded and a transcript of the hearing will be placed in the Public Docket.

Materials relevant to this proposed rulemaking are contained in Public Docket No. A-90-41. The docket is located in room M-1500, Waterside Mall ground floor), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460. The docket may be inspected between 8 a.m. and 12 noon and between 1 p.m. and 3:30 p.m. Monday through Friday. A reasonable fee may be charged by EPA for copying docket materials.

FOR FURTHER INFORMATION CONTACT: Peter Hutchins, U.S. EPA (SDSB-12), Emission Control Technology Division, 2565 Plymouth Road, Ann Arbor, MI 48105, Telephone: (313) 668-4340.

SUPPLEMENTARY INFORMATION:

I. Background

The following information pertains to existing EPA regulations applicable to diesel fuel quality and to NO_x exhaust emissions standards for heavy-duty engines (HDE), and also summarizes the requirements of the CAA as amended in 1990 applicable to the revisions proposed here.

A. Highway Diesel Fuel Quality, Sulfur Content

As part of a final rule published August 21, 1990 (55 FR 34120), EPA established maximum sulfur content standards for highway diesel fuel. The sulfur standard permits a maximum of 0.05 percent by weight, effective October 1, 1993. The rule also required that highway diesel fuel have either a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. Highway diesel fuel also had to be free of visible evidence of a dye used to differentiate highway diesel fuel from other diesel fuel. The regulations also provided for up to a two year extension for compliance by small domestic refiners provided that specified requirements were met. The final rule, published on August 21, 1990, also included changes to the diesel test fuel specification. As published, the specifications the Type 2-D diesel test fuel for 1994 and later model years contained a typographical error in the viscosity specification which requires correction.

B. Heavy-duty Engine Emissions, NO_x Standard

On March 15, 1985 (50 FR 10606), EPA promulgated a multi-year set of particulate and oxides of nitrogen emissions standards for HDEs. In the case of particulate emissions from heavy-duty diesel engines (HDDE), standards were established for the 1994 model year and beyond. In the case of oxides of nitrogen, the emissions standards established for heavy-duty engines (HDE) were: (a) 6.0 g/BHP-hr for 1990 model year HDEs and (b) 5.0 g/BHP-hr effective with the 1991 model year. Because of certain leadtime and stringency provisions which existed in the Clear Air Act prior to the amendments of 1990, EPA was constrained from establishing a NO_x standard corresponding to the particulate standard for 1994 and later model year heavy-duty diesel engines. Thus, today's proposal provides for the necessary NO_x standard for diesel HDEs for 1994 through 1997. Since the 5.0g/BHP-hr NO_x standard for model year 1994 through 1997 is just an extension of the prior standard, there is no conflict with the Act's current leadtime and stability provisions.

In the final rule establishing emission standards for methanol-fueled vehicles and engines (54 FR 14426, April 11, 1989), EPA expanded the scope of the gasoline-fueled and diesel-fueled engine standards promulgated on March 15, 1985 to include methanol-fueled engines operating on the Otto- and Diesel-cycles.

This expansion in the scope of the regulations to include methanol-fueled heavy-duty engines is continued in this proposal. In addition, EPA is presently in the process of developing regulations for natural gas-fueled and liquified petroleum gas-fueled heavy-duty engines and intends to extend the NO_x standard of today's proposal to gaseous-fueled engines as that category is established.

C. Clean Air Act Amendments of 1990

The Clean Air Act Amendments of 1990 (CAAA), amended the Clean Air Act to include revised requirements for the sulfur content of diesel fuel.

Section 211(i) of the CAAA requires that all highway diesel fuel must comply with the maximum sulfur standard of 0.05 percent by weight, and a minimum cetane index of 40, effective October 1, 1993, thereby eliminating the two year extension for small refiners contained in EPA's regulations. Section 211(i) also established sulfur content requirements for heavy-duty diesel certification fuel, and authorized EPA to require the use of a dye to differentiate highway diesel fuel from other diesel fuel, and to adopt an aromatic content requirement as an alternative to the minimum cetane index.

II. Content of the Proposal

This notice proposes revisions to the referenced regulations necessary to bring them into conformance with the Clean Air Act as amended in 1990. These revisions address the highway diesel fuel quality standards.

This proposal also contains amendments to the regulations applicable to 1994 through 1997 model year HDDEs to include a standard for NO_x emissions and to correct the error in Table N94-2 of the regulations for the viscosity specification for Type 2-D diesel test fuel. The proposed 1994 model year NO_x standard is a direct carryover of the 1991 through 1993 model year NO_x standard. Specifically, the regulatory actions being proposed are as follows:

A. Highway Diesel Fuel Quality, Sulfur Content

The only changes needed to conform EPA's current regulations with section 211(i) are: (1) Expansion of the prohibition on introduction into commerce of high sulfur fuel to include any person, and (2) elimination of the two year extension for small refiners, along with related definitions.

B. Diesel Heavy-duty Engines, NO_x Standard

A 5.0 grams per brake horsepower-hour NO_x standard for 1994 through 1997 model year heavy-duty diesel engines.

C. Type 2-D Diesel Test Fuel

Correct the viscosity specification for Type 2-D diesel fuel in table N94-2 to read 2.2-3.4 centistoke.

III. Environmental Impact

A. Highway Diesel Fuel Quality, Sulfur Content

In the final rule establishing the diesel fuel sulfur standard (55 FR 34120, August 21, 1990), EPA noted that while the full benefit of the 0.05 weight percent sulfur standard would not be realized for some small refiners during the two year extension period, there would still be significant reductions from pre-standard levels for those small refiners which used the extension. This was because the interim standards would still require significant reductions in the sulfur content of highway diesel fuel produced by these refiners. For those small refiners which chose not to use the extension there would not have been any effects on benefits. The overall effect of the extension was expected to be small since only a small percentage of on-highway diesel fuel may have been affected for a maximum of two years.

For this action, which proposes removal of the small refiner extension and which as a result will recover the benefits which might not have been realized during the two year period of the extension, the above conditions remain unchanged. A precise estimate of the benefits for this action can not be developed since the degree to which small refiners may have availed themselves of the extension can not be predicted. Directionally, the effect of elimination of the extension will be for a reduction in emissions.

B. Heavy-duty Diesel Engines, NO_x Standard

Reductions in NO_x emissions for HDDEs presently being achieved as a result of the 5.0 g/BHP-hr NO_x standard will continue to be realized through the 1997 model year. When the 5.0 g/BHP-hr NO_x standard was promulgated in 1985, for implementation in the 1991 model year, the anticipated discounted emissions reductions were approximately 0.49 tons per heavy-duty diesel engine over the useful life of the engine.

IV. Economic Impact

A. Highway Diesel Fuel Quality-Sulfur Content

The regulations applicable to the small refiner extension (55 FR 34120, August 21, 1990) specified that use of the extension was available only to those small refiners intending to produce 0.05 weight percent sulfur highway diesel fuel by October 1, 1995. The regulations also specified that small refiners availing themselves of the extension would have to provide evidence to EPA of capital commitments required to make the necessary modifications to their refineries. Because of these regulatory requirements, small refiners which would have used the extension would have delayed costs of complying with the 0.05 weight percent standard by up to two years. They would not, however, have actually eliminated any significant costs. The effect of removing the two year extension, as proposed in this action, on these refiners is that required investments will have to be made one or two years earlier.

Although the small refiner extension was eliminated, the amended Clean Air Act provides for small refiners that produce complying highway diesel fuel to receive desulfurization allowances (title IV, Acid Deposition Control, section 410(h)). Preliminary estimates for the value of these desulfurization allowances suggest that they may be significant. Such provisions should mitigate any special problems that small refiners may face in complying with the highway diesel fuel sulfur standard.

B. Heavy-duty Diesel Engines, NO_x Standard

Since manufacturers are already complying with the 5.0 g/BHP-NO_x standard, carryover of the standard will not impose any new costs on manufacturers or users of vehicles equipped with complying engines.

V. Public Participation

EPA desires full public participation in arriving at its regulatory decisions. To this end, EPA solicits comments on all aspects of today's proposed revisions. Wherever applicable, full supporting data and detailed analyses should be submitted to allow EPA to make maximum use of the comments. Commenters are especially encouraged to provide specific suggestions for changes to any aspects of the proposal that they believe need to be modified or improved. All comments should be directed to the EPA Central Docket Section, Docket No. A-90-41 (see "ADDRESSES").

Any person desiring to present testimony at the public hearing (see "DATES") should notify the contact person listed above of such intent at least seven days prior to the day of the hearing. Please include an estimate of the time you will require for the presentation of the testimony and describe what audio/visual equipment you will require. We request that you provide sufficient copies of your statement or the materials that you will present for distribution at the hearing. A sign-up sheet will be available at the registration table the morning of the hearing for scheduling of the order of testimony.

The official record of the hearing will be kept open for 30 days following the hearing to allow submission of rebuttal and supplementary testimony. All such submissions should be directed to the EPA Central Docket Section, Docket No. A-90-41 (see "ADDRESSES").

The hearing will be conducted informally, and technical rules of evidence will not apply. Written transcripts of the hearing will be made. Anyone desiring to purchase a copy of the transcript should make individual arrangements with the court reporter recording the proceedings.

Commenters desiring to submit proprietary information for consideration should clearly distinguish such information from other comments to the greatest possible extent, and clearly label it "Confidential Business Information." Submissions containing such proprietary information should be sent directly to the contact person listed above, and not to the public docket, to ensure that proprietary information is not inadvertently placed in docket.

Information covered by such a claim of confidentiality will be disclosed by EPA only to the extent allowed and by the procedures set forth in 40 CFR part 2. If no claim of confidentiality accompanies the submission when it is received by EPA, it may be made available to the public without further notice to the commenter.

VI. Statutory Authority

The statutory authority for the standards proposed today are contained in the following sections of the Clean Air Act as amended: Section 202 for the HDE NO_x standard, and section 211 for the highway diesel fuel sulfur standard.

VII. Administrative Designation and Regulatory Analysis

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement that a Regulatory Impact

Analysis be prepared. Major regulations have an annual effect on the economy in excess of \$100 million, have a significant adverse impact on competition, investment, employment or innovation or result in a major price increase. The two elements of this rulemaking package, individually and collectively, do not constitute major rules according to the established criteria. One of the elements, the removal of the extension for small refiners, merely shortens the time for compliance with current rules for a small number of companies. The second element, the carryover heavy-duty engine NO_x standard, will impose no new costs since manufacturers are already complying with the standard. Therefore, I have determined that this proposal does not constitute a "major" regulation and no Regulatory Impacts Analysis has been prepared.

The revisions proposed today have been reviewed by the Office of Management and Budget (OMB) as required by Executive Order 12291. Any comments from OMB and any EPA response to those comments will be found in the public docket for this rulemaking.

VIII. Compliance with the Regulatory Flexibility Act

Under section 605 of the Regulatory Flexibility Act, the Administrator is required to certify that a regulation will not have a significant adverse economic impact on a substantial number of small business entities or to perform an analysis of such impact. There will not be a significant impact on a substantial number of small business entities due to the heavy-duty NO_x standard since none of the manufacturers which will be affected by these regulations are small business entities. Nor will there be such impacts from the changes to the diesel fuel quality provisions. Although EPA had determined that an extension was advisable to mitigate the effect of the diesel fuel quality regulations on small refiners as part of its August 21, 1990 rulemaking, Congress has determined that desulfurization allowances will be a more effective tool for mitigation than the extension. For these reasons, I certify that the rules contained in this proposal will not have an adverse economic impact on a substantial number of small entities.

IX. Reporting and Recordkeeping Requirements

Under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, EPA must obtain OMB clearance for any activity that will involve collecting substantially the same information from 10 or more non-Federal respondents. This proposed rule does not create any new information requirements or contain any new information collection activities.

List of Subjects

40 CFR Part 80

Fuel additives, Gasoline, Imports, Labeling, Motor vehicle pollution, Penalties, Reporting and recordkeeping requirements.

40 CFR Part 86

Administrative practice and procedure, Confidential business information, Labeling, Motor vehicle pollution, Reporting and recordkeeping requirements.

Dated: June 27, 1991.

William K. Reilly,
Administrator.

APPENDIX TO THE PREAMBLE TABLE OF CHANGES PROPOSED TO BE MADE TO VARIOUS SUBPARTS

Section	Change	Reason
1. Part 80 Authority	None	
2. 80.2(bb)	Remove definition of "Exempted on-highway diesel fuel"	Remove small refiner extension. Do.
3. § 80.29 (a), (c), (d), and (e)	Revise paragraph (a), remove existing paragraph (c), recodify and revise paragraphs (d) and (e). Add sections 205 and 216..	Correct typographical error. Paragraph was reserved, NO _x standard not specified.
5. § 86.094-11(a)(1)(iii).....	Add NO _x standard	
6. § 86.1313-94(b)(2)	Change viscosity specification	Correct typographical error.

For the reasons set forth in the preamble, parts 80 and 86 of title 40 of the Code of Federal Regulations are amended as follows:

PART 80—REGULATION OF FUELS AND FUEL ADDITIVES

1. The Authority citation for part 80 continues to read as follows:

Authority: Sections 114, 211 and 301(a) of the Clean Air Act as amended, 42 U.S.C. 7414, 7545 and 7601(a).

2. Section 80.2 is proposed to be amended by removing the definition for "Exempted on-highway diesel fuel" in paragraph (bb) and by reserving paragraph (bb).

3. Section 80.29 is proposed to be amended by revising paragraph (a), by removing existing paragraph (c), by redesignating paragraphs (d) and (e) as paragraphs (c) and (d) respectively, and by revising the newly redesignated paragraphs (c) and (d), to read as follows:

§ 80.29 Controls and prohibitions on diesel fuel quality.

(a) **Prohibited activities.** Beginning October 1, 1993, no person, including but not limited to, refiners, importers, distributors, resellers, carriers, retailers or wholesale purchasers-consumers shall manufacture, introduce into commerce, sell offer for sale, supply,

dispense, offer for supply, or transport any diesel fuel for use in motor vehicles unless the diesel fuel is free of visible evidence of the dye 1,4-dialkylaminanthraquinone and has a cetane index of at least 40, or a maximum aromatic content of 35 volume percent and a sulfur percentage, by weight, no greater than 0.05 percent.

* * * * *

(c) **Liability.** Liability for violations of paragraph (a) of this section shall be determined according to the provisions of § 80.30.

(d) **Penalties.** Penalties for violations of paragraph (a) of this section shall be determined according to the provisions of § 80.5.

PART 86—CONTROL OF AIR POLLUTION FROM NEW MOTOR VEHICLES AND NEW MOTOR VEHICLE ENGINES: CERTIFICATION AND TEST PROCEDURES

4. The authority citation for part 86 is revised to read as follows:

Authority: Secs. 202, 203, 205, 206, 207, 208, 215, 216 and 301(a), of the Clean Air Act, as amended; 42 U.S.C. 7521, 7522, 7524, 7525, 7541, 7542, 7549, 7550, and 7601(a).

5. Section 86.094-11 of subpart A is proposed to be amended by revising paragraph (a)(1)(iii), to read as follows:

§ 86.094-11 Emission standards for 1994 and later model year diesel heavy-duty engines.

(a)(1) * * *

(i) * * *

(ii) * * *

(iii) *Oxides of nitrogen.* (A) 5.0 grams per brake horsepower-hour (1.9 grams

per megajoule), as measured under transient operating conditions.

(B) A manufacturer may elect to include any or all of its diesel heavy-duty engine families in any or all of the NO_x averaging, trading, or banking programs for heavy-duty engines, within the restrictions described in § 86.094-15. If the manufacturer elects to include engine families in any of these programs, the NO_x FELs may not exceed 6.0 grams per brake horsepower-hour (2.2 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, trading or banking programs.

* * * * *

6. Section 86.1313-94 of subpart N is proposed to be amended by revising paragraph (b)(2) and table N94-2, to read as follows:

§ 86.1313-94 Fuel specifications.

* * * * *

(b) * * *

(1) * * *

(2) Petroleum fuel for diesel engines meeting the specifications in Table N94-2, or substantially equivalent specifications approved by the Administrator, shall be used in exhaust emissions testing. The grade of petroleum fuel used shall be commercially designated as "Type 2-D" grade diesel fuel except that fuel commercially designated as "Type 1-D" grade diesel fuel may be substituted provided that the manufacturer has submitted evidence to the Administrator demonstrating to the Administrator's satisfaction that this fuel will be the predominant in-use fuel. Such evidence could include such things as copies of signed contracts from customers indicating the intent to purchase and use "Type 1-D" grade diesel fuel as the primary fuel for use in the engines or other evidence acceptable to the Administrator.

TABLE N94-2

Item	ASTM	Type 1-D	Type 2-D
Cetane Number.....	D613	40-54	40-48
Cetane Index.....	D976	40-54	40-48
Distillation range:			
IBP.....	'F.....	330-390	340-400
10 pct. point.....	(°C).....	(165.6-198.9)	(171.1-204.4)
50 pct. point.....	'F.....	370-430	400-460
90 pct. point.....	(°C).....	(187.8-221.1)	(204.4-237.8)
EP.....	'F.....	410-480	470-540
Gravity.....	(°C).....	(210-248.9)	(243.3-282.2)
Total sulfur.....	'F.....	460-520	560-630
Hydrocarbon composition:	(°C).....	(237.8-271.1)	(293.3-332.2)
Aromatics.....	'F.....	500-560	610-690
Paraffins, Naphthenes, Olefins.....	(°C).....	(260.0-293.3)	(321.1-365.6)
Flashpoint, min.....	'API.....	40-44	32-37
Viscosity, centistokes.....	Percent.....	0.03-0.05	0.03-0.05
	D287		
	D2622		
	Percent..	18	127
	D1319	(*)	(*)
	D1319	120	130
	'F.....	(48.9)	(54.4)
	D93		
	(°C).....		
	D445	1.6-2.0	2.2-3.4

¹ Minimum.

² Remainder.

* * * * *

[FR Doc. 91-16119 Filed 7-16-91; 8:45 am]
BILLING CODE 6560-50-M

40 CFR Part 798

[OPTS-46018; FRL 3662-1]

Metabolism and Pharmacokinetic Test Guideline

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: EPA is issuing a proposed rule to establish a test guideline for

generating metabolism and pharmacokinetic data (40 CFR part 798). This proposed rule is a joint guideline to harmonize the pharmacokinetics testing guidelines of the Office of Toxic Substances (OTS) and the Office of Pesticide Programs (OPP). Upon adoption as a final test guideline, this proposed rule will assist EPA in developing health effects test data standards for testing chemicals under the Toxic Substances Control Act (TSCA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

DATES: Comments must be submitted by September 16, 1991.

ADDRESSES: Submit written comments, identified by the document control number (OPTS-46018), in triplicate to: TSCA Public Docket Office (TS-793), rm. NE-C004, Environmental Protection Agency, 401 M St., SW., Washington, DC 20460.

A public version of the record supporting this action without confidential business information, is available in the TSCA Public Docket Office, at the above address, from 8 a.m. to noon and 1 p.m. to 4 p.m., Monday through Friday, except legal holidays.

FOR FURTHER INFORMATION CONTACT:
David Kling, Acting Director,
Environmental Assistance Division (TS-

799), Office of Toxic Substances, rm. E-543B, 401 M St., SW., Washington, DC 20460, (202) 554-1404, TDD: (202) 554-0551.

SUPPLEMENTARY INFORMATION: In the Federal Register of September 15, 1988 (53 FR 35847) EPA issued a proposed guideline for conducting pharmacokinetics (PK) testing. According to section 4(b)(1) of TSCA, test rules shall include standards for the development of test data. This document proposes to establish guidelines and procedures for generating metabolism/pharmacokinetic data and responds to public comments on the initial proposal of the guideline.

I. Introduction

This guideline was previously proposed in the Federal Register of September 15, 1988 (53 FR 35847). Following the initial proposal, EPA received written comments from eight commenters. As a result of discussions with the commenters a workshop was held on March 7 and 8, 1990 to address practical aspects of the current state-of-the-art of PK testing protocols as they relate to the proposed guideline. Both public comments and the workshop discussions were considered while preparing this proposed guideline.

Since the PK guideline was first proposed, EPA has begun to harmonize guidelines within OPTS to the extent possible given the different mandates under the Toxic Substances Control Act (TSCA) and Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The TSCA and FIFRA PK guidelines have been harmonized under this program. Therefore, certain changes to the guideline have been made which are not directly a result of responding to public comments on the initial proposal of the guideline.

Today EPA is reproposing the PK and metabolism test guideline to provide notice of the harmonization effort and to allow for additional comments. Persons who commented on the initial proposed rule (53 FR 35847, Sept. 15, 1988) should bear in mind that this proposed test guideline differs considerably from the September 1988 version. Codification of these guidelines will not impose any regulatory obligation on any person who may be subject to a test rule under section 4 of TSCA. Specific guidelines do not become mandatory test standards until they are promulgated as such in individual section 4 test rules. When promulgated as such in test rules, the relevant TSCA test guidelines will become test standards for only that particular section 4 test rule and will not serve as generic test standards. EPA may propose modifications to the

various guidelines as they are utilized for chemical-specific test rules. In each chemical-specific test rule, the proposed rule and test standards and any modifications will be proposed for public comment.

II. Response to Public Comments

Comments (Refs. 1 through 8) on the September 1988 proposed PK guideline were received from Allied Signal (Allied), ICI Americas Inc. (ICI), Eastman Kodak Co. (Kodak), Fermenta Plant Protection (Fermenta), Ricerca Inc. (Ricerca), the Halogenated Solvents Industry Alliance (HSIA), The Procter and Gamble Co. (P & G), and the Pharmacokinetics Group of the Specialty Organic Chemicals Manufacturers' Association (SOCMA).

In addition to the public comments received by EPA, many of the same topics served as a basis for a PK Workshop at which individuals from EPA, industry, and academia met on March 7 and 8, 1990 to discuss practical aspects of PK testing protocols as they relate to the guideline (Ref. 9).

For the most part EPA agreed that incorporating comments into the PK Test Guideline would lead to a more workable guideline based on currently available PK testing protocols. Therefore, for the sake of brevity the comments are not addressed individually but are grouped together under general topics.

1. Definitions. Kodak (Ref. 3), Fermenta (Ref. 4), Ricerca (Ref. 5), and SOCMA (Ref. 8) all commented on the definitions; specifically they objected to the wording of the definitions of bioavailability, metabolism, and percent absorbed. After careful consideration EPA is proposing to delete the definitions of bioavailability and percent absorbed and is proposing to redefine metabolism to include only the enzymatic and nonenzymatic processes that affect a chemical substance in the body.

2. Animal care. Kodak (Ref. 3) and SOCMA (Ref. 8) commented that the environmental conditions in the guideline were more restrictive than those in NIH-78-23. EPA agrees and is proposing revised environmental conditions.

3. Good laboratory practices (GLPs). SOCMA (Ref. 8) commented that studies conducted using the guideline should comply with Good Laboratory Practice Standards (GLPS). EPA agrees and is proposing to add a reference to the GLPS to the guideline.

4. Animal selection. Allied (Ref. 1), ICI (Ref. 2), Kodak (Ref. 3), HSIA (Ref. 6), P&G (Ref. 7), and SOCMA (Ref. 8) commented that the guinea pig is not an

appropriate species for the dermal PK studies since other PK studies and toxicity studies are all conducted with rats. EPA agrees and is proposing to delete the requirement for use of the guinea pig in the dermal PK study.

Kodak (Ref. 3) commented that the weight and age of the animals required in the PK guideline were inappropriate because of the relatively small size of F344 rats. EPA agrees and is proposing to change the guideline so that young adult rats may be used as long as animal weights are similar within treatment groups; exact age of the animals would be left to the discretion of the testing laboratory.

5. Test substance. Kodak (Ref. 3), HSIA (Ref. 6), and SOCMA (Ref. 8) commented that the guideline should have provision for use of nonradioactive test substance. EPA agrees and is proposing to revise the guideline to indicate that non-radioactive test substance may be used in all portions of PK testing except for material balance and metabolite identification with the provision that the testing laboratory must demonstrate that there is an analytical method for the nonlabeled material that is at least as sensitive as that for the labeled material.

P&G (Ref. 7) and SOCMA (Ref. 8) commented that requiring radiopurity of 99 percent was too restrictive and in some cases may not be an achievable level; they suggested a purity of >95 percent. EPA agrees that a purity of 99 percent may not always be achievable; however, EPA is proposing to retain a purity of 99 percent as a goal but with provisions for using materials of lower purity as long as impurities present at 1 percent or more are identified.

6. Dosage selection. ICI (Ref. 2), Kodak (Ref. 3), and HSIA (Ref. 6) commented that the use of the same high and low doses in the oral and dermal portions of the guideline were inappropriate. EPA agrees and proposes to revise the guideline to require that a high and low dose be selected for each route of exposure independent of any other route.

ICI (Ref. 2), Kodak (Ref. 3), HSIA (Ref. 6), and SOCMA (Ref. 8) commented that the choice of high doses based on overt toxicity is likely to introduce ambiguities into the PK studies. EPA agrees and proposes to require the high dose to induce minimum toxicity by the route of administration to be used in the PK tests based, if possible, on toxicity tests performed by the same route of exposure.

7. Dosage and treatment. Kodak (Ref. 3) commented that the intravenous (IV) dose should not be set arbitrarily to be

the same as the low dose from another route of dosing. EPA agrees and proposes that the IV dose be selected based on criteria such as acute toxicity and availability of a suitable vehicle.

ICI (Ref. 2) considered an application area of 2 cm² to be too small for meaningful PK studies by the dermal route. P&G (Ref. 7) objected to the inclusion of an experimental procedure for the determination of the dermal absorption of volatile organics in the guideline. EPA agrees with both comments concerning dermal PK studies. The application area is proposed to be revised to a minimum 10 cm² (approximately 1.5 in²) as an area large enough to allow an adequate amount of test material to be applied to the animal but still constitute no more than 10 percent of the total body surface area. The method cited in the September 15, 1988 proposed guideline for testing volatile compounds has been deleted.

SOCMA (Ref. 8) suggested the addition of the option of pretreating with radioactive test compound in the repeated-dose studies. EPA proposes not to change the guideline from that in the September 1988 proposed rule; however, as with most portions of the guideline, chemical-specific changes may be made when the guideline is applied in a test rule.

SOCMA (Ref. 8) questioned the inclusion of repeated-dose groups for all three routes of exposure. This requirement is retained in the reproposal. EPA's purpose for issuing the pharmacokinetics and metabolism guideline is to provide a set of experimental procedures from which appropriate tests may be selected to gather information on the pharmacokinetic properties and metabolism of a chemical substance or mixture (test substance) that is the subject of a toxicity study under TSCA or FIFRA. Rarely will all routes of exposure be requested for a given test substance; instead, the intravenous route and one or two other routes appropriate to that test substance may be specified.

8. *Dermal washing studies.* ICI (Ref. 2) commented that the use of an organic solvent for the dermal washing study may enhance the dermal absorption of a test material and is, therefore, inappropriate. They recommend use of soap-and-water wash only. The same issue was raised in the Dermal Route Working Group of the PK Workshop (Ref. 9). That group recommended that the solvent wash not be used. EPA disagrees with these comments. The purpose of the washing study is to determine the best way to remove the test substance from the skin following

the 6-hour exposure period in the definitive PK study. If the soap-and-water wash removes the test substance from the skin in the washing study then the use of a solvent in the PK study would not be required. However, in the case of highly lipophilic compounds a soap-and-water wash may not remove the compound from the skin whereas an organic solvent may. If the compound is not removed from the skin then it is expected to remain as a reservoir for continued absorption throughout the collection period which may alter the apparent pharmacokinetics of the compound. Therefore EPA proposes to leave the requirement for a dermal washing study in the guideline. It should be kept in mind that the guideline is a general set of studies from which specific tests will be selected for a chemical-specific test rule.

9. *Types of studies.* Kodak (Ref. 3) commented that the sex of the animals to be used in the PK portion of the studies was not specified. Kodak (Ref. 3) and SOCMA (Ref. 8) commented that the sex of the animals to be used in the metabolism portion of the studies was not specified. EPA recognizes that the sex was not specified; this has been corrected in the repropored guideline. Both male and female animals are proposed for both the PK and metabolism studies.

ICI (Ref. 2) and SOCMA (Ref. 8) commented that the proposed guideline should be revised to permit the use of pilot studies. EPA agrees that pilot studies are to be encouraged at the discretion of the testing laboratory for whatever purposes they deem necessary to set parameters for the definitive study. EPA proposes to revise the guideline to allow use of pilot studies.

Kodak (Ref. 3) and SOCMA (Ref. 8) commented that the collection of blood and excreta from the same animals may not be technically feasible. EPA agrees and is proposing to revise the guideline such that the testing laboratory would have the option of using as many animals as they deem necessary to collect the required blood and excreta samples.

ICI (Ref. 2), Kodak (Ref. 3), and SOCMA (Ref. 8) commented that it is technically difficult to collect excreta during inhalation exposure. This issue was discussed in the Inhalation Route Work Group of the PK Workshop (Ref. 9); they recommended that excreta not be collected during the inhalation exposure. EPA agrees and is proposing to revise the guideline such that excreta collection begins after the inhalation exposure period.

10. *Measurements.* Kodak (Ref. 3) commented that criteria for termination

of collection of excreta should be changed for the dermal and inhalation routes of dosing. EPA proposes to retain this requirement as it was originally proposed on September 15, 1988. Since this guideline is generic in nature, criteria for termination of a study have been left as general as possible. As with other aspects of the guideline, specific requirements for a chemical substance under a test rule can be suggested as comments on the proposed rule.

P&G (Ref. 7) commented that requirements for reporting tissue levels at 24-hours post-dosing were inconsistent with the study termination criteria. EPA agrees that the requirement for reporting of tissue levels at times other than study termination was ambiguous. EPA proposes to revise the guideline to accommodate sacrifice of animals as necessary to ascertain tissue levels.

ICI (Ref. 2) commented that the measurement of radioactivity in the blood may not be a sensitive measure of what is occurring in the PK studies. EPA agrees and proposes to revise the guideline to require measurement of parent compound and metabolites in the plasma.

ICI (Ref. 2), Kodak (Ref. 3), and SOCMA (Ref. 8) commented that requiring the measurement of radioactivity in the tissues listed in the proposed guideline for all PK studies is not warranted. EPA agrees and is proposing to revise the guideline such that measurement of the radioactivity in tissues is study-dependent.

Kodak (Ref. 3) commented that collection of expired air should only be required when there is reasonable expectation that test substance and/or its metabolites are present in expired air. EPA agrees and believes that the use of a pilot study as provided for in the guideline is an excellent way, prior to the definitive study, to determine if there is exhalation of test compound or its metabolites.

Kodak (Ref. 3), P & G (Ref. 7), and SOCMA (Ref. 8) commented that it is inappropriate to compare the PK measurements for the single low-dose inhalation group with the PK measurements for the repeated-oral-dose group. EPA agrees and proposes to revise the guideline such that PK measurements for single low-dose groups are compared to PK measurements for a repeated-dose group treated via the same dosing route.

SOCMA (Ref. 8) suggested that the requirement for metabolite identification be modified so that metabolites which comprise 5 percent or more of the administered dose must be identified.

EPA agrees and proposes that the guideline state that major metabolites, i.e. those comprising 5 percent or more of the administered dose, shall be identified if possible.

11. Reporting results. P&G (Ref.7) recommended that the requirement for reporting biotransformation pathways be deleted from the guideline. EPA proposes to change the requirement from biotransformation pathway to a requirement to report the metabolic pathway to the extent it has been ascertained.

SOCMA (Ref. 8) requested a clarification of the reporting requirement concerning PK models. EPA is proposing to delete that requirement from the guideline and will leave it to the discretion of individual testing laboratories as to the extent that PK models are developed. These models may be submitted under optional sections at the end of the report.

III. Metabolism and Pharmacokinetic Studies

The purpose of the pharmacokinetics and metabolism guideline is to provide a set of experimental procedures from which appropriate tests may be selected to gather information on the pharmacokinetic properties and metabolism of a chemical substance or mixture (test substance) that is the subject of a toxicity study under TSCA.

EPA provides metabolism/pharmacokinetic guidelines so scientists can select individualized protocols to study specific test substances. The guideline is designed to determine:

1. The extent of absorption of the test substance by relevant routes of exposure.

2. The biological half-life of the test substance and its metabolites, and whether these substances accumulate in the body.

3. The pattern of distribution of the test substance and its metabolites in organs and tissues, and whether the pattern suggests possible bioconcentration and exposure towards specific organ(s).

4. The biotransformation pattern of the test substance, and whether reactive metabolites are formed to the extent these can be determined.

5. The routes of elimination of the test substance and its metabolites, and whether the rates of elimination indicate bioaccumulation.

In addition, the guideline is designed to detect major differences between sexes relative to the metabolic processes of absorption, tissue distribution, biotransformation and excretion; whether the metabolic

processes are modified by different routes of administering the test substance; and whether these processes are modified by repeated dosing.

It should be kept in mind, as stated in § 798.7485, that the pharmacokinetics and metabolism guideline encompasses a set of experimental procedures from which appropriate tests may be selected to gather information on the pharmacokinetic properties and metabolism of a chemical substance or mixture (test substance) that is the subject of a toxicity study under TSCA or FIFRA. Rarely will all routes of exposure be requested for a given test substance; instead, the intravenous route and one or two other routes appropriate to that test substance may be specified. Metabolite identification is not always a requirement for the pharmacokinetics studies; metabolite identification requirements are determined on a chemical-specific basis.

IV. Additional Guidelines Under Development

For certain applications, such as those that may arise under various use scenarios for pesticides, dermal-dosing studies other than those contained in this guideline may be required. These guidelines are under development.

V. Rulemaking Record

EPA has established a record for this rulemaking, docket number [OPTS-46018]. Since the proposed guideline was initially published in conjunction with the Proposed Methyl Ethyl Ketoxime (MEKO) Test Rule (53 FR 35838) cross-reference is made to the MEKO docket number [OPTS-42099]. The rulemaking record is located in the TSCA Public Docket Office, rm. NE-G004, 401 M St., SW, Washington, DC 20460.

This record includes the following information:

References

(1) Allied Signal. Comments on EPA's proposed pharmacokinetics test guideline. (November 14, 1988).

(2) ICI Americas Inc. Comments on EPA's proposed pharmacokinetics test guideline. (November 18, 1988).

(3) Eastman Kodak Co. Comments on EPA's proposed pharmacokinetics test guideline. (November 14, 1988).

(4) Fermenta Plant Protection. Comments on EPA's proposed pharmacokinetics test guideline. (November 22, 1988).

(5) Ricerca Inc. Comments on EPA's proposed pharmacokinetics test guideline. (November 21, 1988).

(6) Halogenated Solvents Industry Alliance. Comments on EPA's proposed pharmacokinetics test guideline. (December 22, 1988).

(7) The Procter and Gamble Co. Comments

on EPA's proposed pharmacokinetics test guideline. (November 14, 1988).

(8) Pharmacokinetics Group, SOCMA. Comments on EPA's proposed pharmacokinetics test guideline. (November 14, 1988).

(9) EPA and SOCMA. 1990. Proceeding of the PK Workshop Sponsored Jointly by EPA and SOCMA on March 7 and 8, 1990. (Manuscript in preparation.)

VI. Other Regulatory Requirements

A. Executive Order 12291

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. EPA has determined that this test guideline is not major because it does not meet any of the criteria set forth in section 1(b) of the Order, i.e., it will not have an annual effect on the economy of at least \$100 million, will not cause a major increase in costs or prices, and will not have a significant adverse effect on competition or the ability of U.S. enterprises to compete with foreign enterprises.

This guideline was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any written comments from OMB to EPA, and any EPA response to those comments, are included in the rulemaking record.

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act (5 U.S.C. 601 et seq., Pub. L. 96-354, September 19, 1980), EPA is certifying that this guideline will not have a significant impact on a substantial number of small businesses because: (1) They are not likely to perform testing themselves, or to participate in the organization of the testing effort; (2) they will experience only very minor costs, if any, in securing exemption from testing requirements; and (3) they are unlikely to be affected by reimbursement requirements.

C. Paperwork Reduction Act

This guideline contains no information collection requirements and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

List of Subjects in 40 CFR Part 798

Chemicals, Environmental protection, Hazardous substances, Health effects, Incorporation by reference, Laboratories.

Dated: July 5, 1991.

Victor J. Kimm,
Acting Assistant Administrator for Pesticides
and Toxic Substances.

Therefore, 40 CFR, chapter I, subchapter R, is proposed to be amended as follows:

PART 798—[AMENDED]

1. The authority citation for part 798 would continue to read as follows:

Authority: 15 U.S.C. 2603

2. By adding § 798.7485 to subpart H to read as follows:

§ 798.7485 Pharmacokinetics and metabolism studies.

(a) *Purpose.* The pharmacokinetics and metabolism guideline encompasses a set of experimental procedures from which appropriate tests may be designed to gather information on the pharmacokinetic properties and metabolism of a chemical substance or mixture (test substance) that is the subject of a toxicity study under TSCA and FIFRA. Rarely will all routes of exposure be requested for a given test substance; instead, the intravenous route and one or two other routes appropriate to that test substance may be specified. The experimental objectives of these tests are to:

(1) Ascertain the pharmacokinetics and metabolism of a test substance after administration by the relevant routes of exposure.

(2) Examine the effects of dose level and of repeated dosing on the pharmacokinetics and metabolism of a test substance.

(b) *Definitions.* The following definitions apply to this section:

Pharmacokinetics means the study of the rates of absorption, tissue distribution, biotransformation, and excretion.

Metabolism means the sum of the enzymatic and nonenzymatic processes by which a particular substance is handled in the body.

(c) *Good laboratory practice standards.* The pharmacokinetics and metabolism tests outlined in this guideline shall conform to the laboratory practices stipulated in 40 CFR part 792 "Good Laboratory Practice Standards".

(d) *Test procedures—(1) Animal selection—(i) Species.* The rat shall be used for testing because it has been used extensively for metabolic and toxicological studies. The use of other, or additional, species will be specified in a chemical-specific test rule if the available evidence supports such an approach.

(ii) *Strain.* Adult animals of the strain used or proposed to be used for the determination of adverse health effects associated with the test substance shall be used.

(iii) *Test groups.* The animals shall be healthy young adults and their body weight range shall be comparable among test groups of the same sex. In all studies, unless otherwise specified, each test group shall contain at least five animals of each sex for a total of at least 10 animals. The number of animals per group shall be increased, as appropriate, to satisfy the sampling requirements inherent to multiple time point studies, or to accommodate the need for serial sacrifices.

(iv) *Animal care.* Animal care and housing shall be in accordance with the recommendations contained in DHHS/PHS NIH Publication No. 8623, 1985, "Guidelines for the Care and Use of Laboratory Animals."

(2) *Administration of test substance—(i) Test substance.*

The use of a radioactive test substance is required for all materials balance and metabolite identification segments of the study. Ideally, the purity of both radioactive and nonradioactive test substances should be greater than 99 percent; however, in the event this purity cannot be achieved, the purity of the test substance should be the highest achievable; the purity will be cited in the test rule where appropriate. The purity along with the identity of major impurities, i.e. those present at 1 percent or greater, shall be reported. For other segments of the study, nonradioactive test substance may be used if it can be demonstrated that the analytical sensitivity of the method used with nonradioactive test substance is equal to or greater than the sensitivity which could be obtained with the radiolabeled test substance. The radioactive and nonradioactive test substances shall be chromatographed separately and together to establish purity and identity. Additional guidance will be provided in chemical specific test rules to assist in the definition and specifications of test substances composed of mixtures and methods for determination of purity.

(ii) *Dose selection.* A minimum of two dose levels, a high and a low dose level, are required for each route of administration. The dose levels selected shall be suitable for the determination of pharmacokinetic properties and metabolism studies, with specific objectives reflected in the reporting requirements of the specific test rule. Ideally, the high dose of the test substance should elicit minimal signs of toxicity upon repeated administration. It is recognized that this level will vary

with the toxicity profile of the test substance, but to the extent possible, toxicity will define the highest dose available for pharmacokinetics and metabolism testing. The low dose should be at least one order of magnitude below the high dose and should ideally be a no-observable-effect-level. This approach does not preclude the use of additional dose levels intermediate to those prescribed.

(iii) *Dosage and treatment—(A) Oral.* At a minimum, two dose levels of the test substance shall be used in the oral portion of the study, a high dose and a low dose. The dose levels should be selected in accordance with paragraph (d)(2)(ii) of this section. Both the high and low dose levels shall be accomplished by gavage.

(B) *Dermal—(1) Dermal treatment.* At a minimum, two dose levels of the test substance shall be used in the dermal portion of the study, a high dose and a low dose. The dose levels should be selected in accordance with paragraph (d)(2)(ii) of this section. Ideally, the low dose should be at least one order of magnitude below the high dose unless limited by analytical detection constraints and should be a no-observable-effect-level. The dermal doses shall be dissolved, if necessary, in a suitable vehicle and applied in volumes adequate to deliver the doses. The backs—or other skin area as appropriate—of the animals should be lightly clipped with an electric clipper about 24 hours before treatment. The test substance shall be applied to the intact clipped skin (a minimum of 10 cm² for rats, total clipped area not to exceed 10 percent of body surface area). The same nominal treatment surface area shall be used for all dermal test groups. The dosed areas shall be protected with a suitable covering which is secured in place. The animals shall be housed separately.

(2) *Dermal washing study.* A washing experiment shall be conducted to assess the removal of the applied low dose of the test substance by washing the treated skin area with soap and water and an appropriate organic solvent. The low dose shall be applied to four animals in accordance with paragraph (d)(2)(iii)(B)(1) of this section. After application (2 to 5 minutes), the treated areas of two animals shall be washed with soap and water, and the treated areas of the remaining animals shall be washed with an appropriate organic solvent. The amounts of test substance recovered in the washes shall be determined to assess the effectiveness of removal by washing.

(C) *Inhalation.* At a minimum, two concentrations of test substance shall be used in this portion of the study, a high concentration and a low concentration. The test concentrations should be selected in accordance with paragraph (d)(2)(ii) of this section. Inhalation treatments shall be conducted using a "nose-cone" or "head only" apparatus to prevent absorption by alternate routes of exposure. If other inhalation exposure conditions are proposed for use in a chemical-specific test rule, justification for the modification shall be documented.

(D) *Intravenous.* An appropriate dose of the test substance shall be administered intravenously. The intravenous data obtained in this portion of the study shall be suitable for the determination of absorption, distribution, and excretion parameters, and metabolism of the test substance. Factors that should be considered in the selection of intravenous doses are: the acute toxicity of the test substance, the availability of a suitable vehicle (if saline is unsuitable), and the solubility of the test substance in the vehicle.

(iv) *Dosing schedule—(A) Intravenous study.* Group A shall be dosed intravenously with the test substance as described in paragraph (d)(2)(iii)(D) of this section.

(B) *Oral studies.* (1) Group B shall be dosed once with the low dose of the test substance.

(2) Group C shall be dosed once with the high dose of the test substance.

(C) *Inhalation studies.* A single 6-hour exposure period shall be used for each group.

(1) Group D shall be exposed to a mixture of the test substance in air at the low concentration.

(2) Group E shall be exposed to a mixture of the test substance in air at the high concentration.

(D) *Dermal studies.* Unless precluded by corrosivity, the test substance shall be applied and kept on the skin for a minimum of 6 hours. At the time of removal of the covering, the treated area shall be washed following the procedure established in paragraph (d)(2)(ii)(B)(2) of this section. Both the covering and the washes shall be analyzed for residual test substance. At the termination of the studies, each animal shall be sacrificed and the treated skin area removed. An appropriate section of treated skin shall be analyzed to determine residual radioactivity.

(1) Group F shall be dosed once dermally with the low dose of the test substance.

(2) Group G shall be dosed once dermally with the high dose of the test substance.

(E) *Repeated dosing study.* Group H shall receive a series of single daily low doses of nonradioactive test substance, e.g. 7 to 14 consecutive days, by the oral, dermal, or inhalation route as specified for the particular test substance under study. Twenty-four hours after the last nonradioactive dose, a single low dose of radioactive test substance shall be administered by the same exposure route used to deliver the nonradioactive chemical.

(3) *Pilot studies.* The use of pilot studies is recommended for the selection of experimental conditions for the pharmacokinetics and metabolism studies.

(4) *Measurements—(i)*

Pharmacokinetics. Groups A through H shall be used to determine the kinetics of absorption and excretion of the test substance.

(A) *Plasma levels.* The levels of test substance and metabolites shall be determined in blood plasma at appropriate time intervals after initiation of intravenous, oral, inhalation, and dermal dosing. The sampling intervals should be compatible with the exposure route under study. In the intravenous and oral treatment groups (i.e., Groups A, B, and C), the concentration of test substance and metabolites in plasma shall be measured at appropriate time intervals following administration. In the inhalation and dermal treatment groups (i.e., Groups D through G) the concentration of test substance and metabolites in plasma shall be measured at appropriate time intervals during and following the exposure period. In addition, in the groups administered the test substance by inhalation (i.e., Groups D and E), the concentration of test substance in the exposure atmosphere shall be measured at appropriate time intervals during the exposure period. The experimental protocols used to obtain pharmacokinetic data in animals receiving a single low dose shall be implemented with animals receiving repeated doses of the test substance (Group H), after administration of the radioactive test substance.

(B) *Excretion.* The quantities of radioactivity eliminated in the urine, feces, and expired air shall be determined separately at appropriate time intervals. If a pilot study has shown that no significant amount of radioactivity is excreted in expired air then expired air need not be collected in the definitive study. In the intravenous and oral treatment groups (i.e., Groups A, B, and C), the quantities of radioactivity in excreta shall be measured following administration of the test substance. In the inhalation

treatment groups (i.e., Groups D and E) the quantities of radioactivity shall be measured after cessation of the inhalation exposure period. In the dermal treatment groups (i.e., Groups F and G) the quantities of radioactivity shall be measured during and following the exposure period. Each animal shall be placed in a separate metabolic unit for collection of excreta. At the end of each collection period, the metabolic units shall be cleaned to ensure maximum recovery of excreta. All studies, except the repeated dose studies, shall be terminated at 7 days, or after at least 90 percent of the administered dose has been recovered in the excreta, whichever occurs first. The total quantities of radioactivity shall be determined for excreta collected at least daily until the termination of the study. The collection of carbon dioxide, and other volatile materials, may be discontinued when less than 1 percent of the administered dose is found in the exhaled air during a 24-hour collection period. The experimental protocols used to obtain excretion data in animals receiving a single low dose shall be implemented with animals receiving repeated doses of the test substance (Group H), after administration of the radioactive test substance.

(C) *Tissue distribution.* At the termination of each excretion study, the quantities of radioactivity in whole carcass and in blood shall be determined. As warranted by the particular data requirements of the test substance under study, the quantities of radioactivity in various tissues including bone, brain, fat, gastrointestinal tract, gonads, heart, kidney, liver, lungs, muscle, skin, tissue displaying pathology in this or other toxicology studies, spleen, and residual carcass shall be determined at the termination of the study or at time intervals suitable to obtain data on time dependent tissue distribution.

(ii) *Metabolism studies.* Groups A through H shall be used to determine the metabolism of the test substance. Excreta (urine, feces, and expired air) shall be collected as warranted for identification and quantification of unchanged test substance and metabolites. Appropriate qualitative and quantitative methods shall be used to assay urine, feces, and expired air collected from treated animals. Efforts shall be made to identify major metabolites, e.g. those that comprise 5 percent or more of the administered dose.

(e) *Data and reporting.* The final report required by the test rule shall include the following:

(1) *Presentation of results.* Numerical data shall be summarized in tabular form. Pharmacokinetic data shall also be presented in graphic form when feasible. Qualitative observations relevant to the interpretation of experimental results shall also be reported.

(2) *Reporting results.* In addition to the reporting requirements specified in 40 CFR part 792, subpart J, the following specific information shall also be reported:

(i) *Title/cover page.* Title page and additional requirements (i.e., requirements for data submission, good laboratory practice, and statements of data confidentiality claims), if relevant to the study report, should precede the content of the study formatted below. These requirements are to be found in 40 CFR parts 158 and 160 or parts 795, 798, and 792.

(ii) *Table of Contents.* (A) A concise listing shall precede the body of the report, containing all essential elements of the study and the page and table number where the element is located in the final report of the study.

(B) Essential elements of the Table of Contents should include a summary, an introduction, the materials and methods section, results, discussion/conclusions, references, tables, figures, appendices, and key subsections as deemed appropriate. The Table of Contents should include the page number of each of these elements.

(iii) *Body of the report.* The body of the report shall include information required under § 158.85(a) of this chapter or this guideline, organized into sections and paragraphs as follows:

(A) *Summary.* This section of the study report shall contain a summary and analysis of the test results and a statement of the conclusions drawn from the analysis. This section should highlight the nature and magnitude of metabolites, tissue residue, rate of clearance, bioaccumulation or bioretention, sex differences, etc. The summary should be presented in sufficient detail to permit independent evaluation of the findings.

(B) *Introduction.* This section of the report should include the objective(s) of the study, Guideline references, regulatory history, if any, and a rationale.

(C) *Materials and methods.* This section of the report shall include detailed descriptions of all elements including:

(i) *Test Substance.* (i) This subsection should include identification of the test substance, i.e.: chemical name,

molecular structure, qualitative and quantitative determination of its chemical composition, and type and quantities of any trace impurities whenever possible.

(ii) This subsection should also include information on physical properties including: physical state, color, gross solubility and/or partition coefficient, and stability.

(iii) The type or description of any vehicle, diluents, suspending agents, and emulsifiers or other materials used in administering the test substance should be stated.

(iv) If the test substance is radiolabeled, then information on the following should be included in this subsection: the type of radionuclide, position of label, specific activity, and radiopurity.

(2) *Test animals.* This subsection should include information on the test animals including:

(i) Species.

(ii) Strain.

(iii) Age.

(iv) Sex.

(v) Body weight.

(vi) Health condition.

(vii) Other relevant information.

(3) *Methods.* This subsection should include details of the study design and methodology used. It should include a detailed description of:

(i) How the dosing solution was prepared and the type of solvent, if any, used.

(ii) Number of treatment groups and number of animals per group.

(iii) Dosage levels and volume.

(iv) Route of administration.

(v) Frequency of dosing.

(vi) Fasting period.

(vii) Total radioactivity per animal.

(viii) Animal handling.

(ix) Sample collection.

(x) Sample handling.

(xi) Analytical methods used for separation.

(xii) Quantification/confirmation of metabolites.

(xiii) Other experimental measurements and procedures employed.

(4) *Statistical Analysis.* If statistical analysis is used to analyze the study findings, then sufficient information on the method of analysis and the computer program employed should be included so that an independent reviewer/statistician can reevaluate and reconstruct the analysis.

(D) *Results.* All data should be summarized and tabulated with appropriate statistical evaluation and placed in the text of this section.

Radioactivity counting data should be summarized and presented as dpm and

µg or mg equivalents. Graphic illustrations of the findings, reproduction of the chromatographic and spectrometric charts, and proposed metabolic pathways and molecular structure of metabolites should be included in this section. In addition the following information shall be included in this section as appropriate:

(1) Justification for modification of exposure conditions, if applicable.

(2) Justification for selection of dose levels for pharmacokinetic and metabolism studies.

(3) Description of pilot studies used in the experimental design of the pharmacokinetic and metabolism studies, if applicable.

(4) Quantity and percent recovery of radioactivity in urine, feces and expired air, as appropriate. For dermal studies, include recovery data for treated skin, skin washes, and residual radioactivity in the covering apparatus and metabolic unit as well as results of the dermal washing study.

(5) Tissue distribution reported as quantity of radioactivity in whole carcass and in blood; and, if specified, in various tissues including bone, brain, fat, gastrointestinal tract, gonads, heart, kidney, liver, lung, muscle, skin, tissues displaying pathology in this or other toxicology studies, spleen, and residual carcass of rats sacrificed at the conclusion of the study or at the specified time intervals.

(6) Materials balance developed from each study involving the assay of body tissues and excreta.

(7) Pharmacokinetic and metabolism data obtained by intravenous administration of the test substance.

(8) Plasma levels of the test substance and metabolites after administration by the relevant routes of exposure.

(9) Rate and extent of absorption of the test substance after administration by the relevant routes of exposure.

(10) Rate of excretion of the test substance after administration by the relevant routes of exposure.

(11) Quantities of the test substance and metabolites in excreta collected after administration of single doses.

(12) Quantities of test substance and metabolites in excreta after administration of repeated low doses.

(E) *Discussion and conclusions.* (1) In this section the author(s) should:

(i) Discuss the findings of the study in light of what is already known about this chemical or what is expected.

(ii) Provide a plausible explanation of the metabolic pathways illustrated under paragraph (e)(2)(D) of this section.

(iii) Emphasize species and sex differences whenever possible.

(iv) Compare the nature and magnitude of metabolites, rate(s) of clearance, bioaccumulation or bioretention, and level of tissue residues in the single, low, high, and multidose groups.

(2) The author(s) should be able to derive a concise conclusion that can be supported by the findings of the study.

(F) *Optional sections.* The author(s) may include additional sections such as appendices, any PK models developed, bibliography, tables, and individual animal data.

[FR Doc. 91-17041 Filed 7-16-91; 8:45 am]

BILLING CODE 6560-50-F

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

[Docket No. 74-09; Notice 21]

49 CFR Part 571

Planning Document on Potential Standard 213 Upgrade; Federal Motor Vehicle Safety Standards; Child Restraint Systems

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Request for comments.

SUMMARY: This notice announces the publication of NHTSA of a planning document that discusses planned research and possible upgrades to Federal Motor Vehicle Safety Standard 213, *Child Restraint Systems*. NHTSA seeks public review and comment on the planning document. Comments received will be evaluated and incorporated, as appropriate, into the planned agency activities.

DATES: Comments must be received no later than September 3, 1991.

ADDRESSES: Interested persons may obtain a copy of the document free of charge by contacting NHTSA's docket section at the address provided below.

All comments should refer to the docket and notice number of this notice and be submitted to: Docket Section, room 5109, 400 Seventh Street SW., Washington, DC 20590 (telephone: 202-366-4949). Docket hours are 9:30 p.m. to 4 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT: Mr. George Mouchahoir, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street SW., Washington, DC 20590. Telephone: (202) 366-4919.

SUPPLEMENTARY INFORMATION: Federal Motor Vehicle Safety Standard (FMVSS)

No. 213, "Child Restraint Systems," specifies minimum performance requirements for child restraint systems used in motor vehicles and aircraft. The current version of the standard has been in effect for more than a decade, during which time many new developments and changes have emerged in motor vehicles and child restraint systems. NHTSA has prepared a planning document to specify research addressing issues related to child safety seats and to determine whether an upgrade of the standard is appropriate.

The purpose of this notice is to announce the availability of the document for public review and comment. Received comments will be evaluated and incorporated, as appropriate, into the planned agency activities, which are fully described in the planning document.

Federal Motor Vehicle Safety Standard No. 213

FMVSS No. 213 specifies minimum performance and requirements for child restraint systems used in motor vehicles and aircraft for children who weigh 50 pounds or less. The purpose of the standard is to reduce the number of children killed or injured in motor vehicles and aircraft.

An earlier version of FMVSS No. 213, "Child Seating Systems," used static test performance requirements to assess the potential effectiveness of child safety seats. However, the standard did not regulate car beds or infant carriers. The current version of FMVSS No. 213 was issued in December 1979 with an effective date of January 1, 1981. In addition to expanding the coverage of types of restraint systems and establishing dynamic tests for measuring performance, the title of the standard was changed from "Child Seating Systems" to "Child Restraint Systems."

The current standard exposes child restraint systems, lap belted in a standard test seat, to a simulated 30 mph-frontal impact and establishes limits on test dummies' excursion and injury criteria. To protect the child, limitations are set on the amount of force that can be exerted on the head and chest of a child test dummy during the dynamic testing (S5.1.2 of Standard 213). To reduce the possibility that child occupants in child restraint systems will contact vehicle interior surfaces during a crash, limitations are also set on the amount of frontal head and knee excursions that can be experienced by the test dummy (S5.1.3). To prevent a child from being ejected from rearward-facing restraints (e.g., infant restraints),

limitations are set on the amount that such restraints can tip forward (S5.1.4).

During the dynamic testing, no load-bearing or other structural part of any child restraint system shall separate so as to create jagged edges that could cut and injure a child. If the restraint has adjustable positions, it must remain in the position to which it was adjusted for testing after the testing is completed, so that the restraint system does not shift positions during a crash and potentially catch a child's limbs between the shifting parts or allow the child to "submarine" (i.e., allow the child to slide down and out of the restraint during a crash) (S5.1.1. of Standard 213).

To prevent injuries to children during crashes from contact with the surfaces of the child restraint itself, the standard specifies requirements for the size and shape of those surfaces. In addition, protective padding requirements are set for restraints designed for use by infants (weight of 20 pounds or less (S5.2 of Standard 213)). FMVSS No. 213 also establishes a number of other requirements with respect to such factors as the height and width of the seat back surface, the locations of fixed or movable surfaces in front of the seated child, belt buckles and their release, seat belt material, labeling requirements, etc.

All 50 States and the District of Columbia now have child passenger laws which require the use of child restraints. Most such laws did not exist when FMVSS No. 213 was promulgated. Data indicate that the combination of high-quality child restraint systems being sold as a result of FMVSS No. 213, and the increased use of these restraints because of education and state laws, has significantly reduced the risk of child fatality or injury in motor vehicle crashes. Crash data analyses indicate that child restraint systems are approximately 70 percent effective in reducing fatalities and injuries to children. This is especially important since motor vehicle crashes are the leading cause of accidental death among children under the age of five.

NHTSA has identified several issues which affect the performance of child restraint systems. The agency is interested in public comments as to whether these issues require upgrades to FMVSS No. 213. The planning document discusses these issues and potential rulemaking activities pertinent to child passenger safety. These issues pertain to the adequacy of present test dummies, labeling, requirements, test procedures, performance measures, and air bag interaction with child restraint systems. Also included in the discussion

is a brief description of current rulemaking activities regarding FMVSS No. 213.

Even though the planning document addresses predominantly rulemaking related issues, NHTSA has been undertaking a broad range of child safety activities including: Public information and education projects, behavioral research projects, and crashworthiness projects. A summary of these activities is provided as an addendum to the planning document.

Comments

Interested persons are invited to submit comments on the document. It is requested but not required that 10 copies be submitted.

Those persons desiring to be notified upon receipt of their comments in the rules docket should enclose a self-addressed, stamped postcard in the envelope with their comments. Upon receiving the comments, the docket

supervisor will return the postcard by mail.

List of Subjects in 49 CFR Part 571

Motor vehicle safety.

(15 U.S.C. 1392; 1401, 1407; delegation of authority at 49 CFR 1.50 and 501.8)

Issued on July 12, 1991.

Barry Felrice,

Associate Administrator for Rulemaking.

[FR Doc. 91-16981 Filed 7-16-91; 8:45 am]

BILLING CODE 4910-59-M

Notices

Federal Register

Vol. 56, No. 137

Wednesday, July 17, 1991

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

DEPARTMENT OF AGRICULTURE

Food Safety and Inspection Service

[Docket No. 91-003N]

Exemption for Retail Stores; Adjustment of Dollar Limitations

AGENCY: Food Safety and Inspection Service, USDA.

ACTION: Notice.

SUMMARY: This notice announces that the dollar limitations currently in effect on the annual sales of meat and poultry products that can be sold by retail stores exempt from Federal inspection requirements to consumers other than household consumers, such as hotels, restaurants and similar institutions, have been adjusted to conform with price changes for meat and poultry products as indicated by the Consumer Price Index. The dollar limitation for meat products increases from \$33,700 to \$37,100 for calendar year 1991 and the dollar limitation for poultry products remains at \$33,100 for calendar year 1991.

EFFECTIVE DATE: July 17, 1991.

FOR FURTHER INFORMATION CONTACT: Mr. Ralph Stafko, Director, Policy Office, Policy Evaluation and Planning Staff, Food Safety and Inspection Service, U.S. Department of Agriculture, Washington, DC 20250, (202) 447-8168.

Background

Federal inspection of meat and poultry products prepared for sale or distribution in commerce or in States designated under section 301(c) of the Federal Meat Inspection Act (FMIA) (21 U.S.C. 661(c)) and section 5(c) of the Poultry Products Inspection Act (PPIA) (21 U.S.C. 454(c)) is required by law and administered by the Food Safety and Inspection Service (FSIS). However, section 301(c)(2) of the FMIA (21 U.S.C. 661(c)(2)) and section 5(c)(2) of the PPIA (21 U.S.C. 454(c)(2)) state that the

general requirement of routine Federal inspection *** shall not apply to operations of types traditionally and usually conducted at retail stores * * * when conducted at any retail store * * * for sale in normal retail quantities * * * to consumers * * *."

FSIS regulations (9 CFR 303.1(d) and 381.10(d)) define retail stores that qualify for exemption from routine Federal inspection under the FMIA or PPIA. Under the regulations, for an establishment to be an exempt retail establishment depends, in part, upon the percentage and volume of its trade with consumers other than household consumers, such as hotels, restaurants and similar institutions. Accordingly, the Federal meat and poultry products inspection regulations state in terms of dollars the maximum amount of meat and poultry products which may be sold to nonhousehold consumers if the establishment is to remain an exempt retail establishment. During calendar year 1990, the maximum amount for meat products was \$33,700; for poultry products, the amount was \$33,100.

The Federal meat and poultry products inspection regulations (9 CFR 303.1(d)(2)(iii)(b) and 381.10(d)(2)(iii)(b)) further provide that the dollar limitation on product sales by retail stores to consumers other than household consumers will be automatically adjusted during the first quarter of each calendar year whenever the Consumer Price Index, published by the Bureau of Labor Statistics (BLS), Department of Labor, indicates a change during the previous year in the price of the same volume of product exceeding \$500, upward or downward. The regulations also require that notice of the adjusted dollar limitation be published in the Federal Register.

The BLS Consumer Price Index for 1990 indicates a price increase in meat products of 10.1 percent and a price decrease in poultry products of 0.2 percent based on the average annual increase. As a percentage of the existing dollar limitation, a change in excess of \$500 is indicated for meat products only. When rounded off to the nearest \$100, the price increase for meat products amounts to \$3,400. The price decrease for poultry products amounts to less than \$500, and therefore remains at \$33,100 for calendar year 1991.

FSIS has previously used one of two BLS price index figures to calculate the

annual price changes for meat and poultry products. One BLS figure is based on a comparison of the averages of each year's prices (average-to-average) and the other is a comparison of the end of the year prices with those prevailing 12 months before (December-to-December). Since the two index figures may vary, only one figure can be used in any given year. In the past few years, FSIS has been using the average-to-average index figure. The average-to-average index figure has been used to calculate this year's annual price change for meat and poultry products. To avoid any variance and to achieve consistency in calculating the annual price changes, in the future, FSIS will only use the average-to-average index figure.

Accordingly, FSIS, in accordance with §§ 303.1(d)(2)(iii)(b) and 381.10(d)(2)(iii)(b) of the regulations, has automatically raised the dollar limitation of permitted sales of meat products from \$33,700 to \$37,100 and maintained the dollar limitation of permitted sales for poultry products at \$33,100.

Done at Washington, DC, on July 11, 1991.

R.J. Prucha,

Acting Administrator, Food Safety and Inspection Service.

[FR Doc. 91-17033 Filed 7-16-91; 8:45 am]

BILLING CODE 3410-DM-M

Rural Electrification Administration

Brazos Electric Power Cooperative, Inc.; Intent To Conduct Public Scoping Meetings and Prepare an Environmental Assessment

AGENCY: Rural Electrification Administration, USDA.

ACTION: Notice of intent to conduct public scoping meetings and prepare an Environmental Assessment for the construction and operation of two proposed 100 MW simple cycle gas turbines.

SUMMARY: The Rural Electrification Administration (REA) intends to conduct public scoping meetings and prepare an Environmental Assessment (EA) in connection with possible REA approvals relating to a project proposed by Brazos Electric Power Cooperative, Inc. (Brazos), of Waco, Texas. The project consists of the construction and operation of two 100 megawatt (MW)

simple cycle gas turbine generating units. Brazos's preferred location is the R. W. Miller Plant site located on Lake Palo Pinto in Palo Pinto County, Texas.

DATES: The REA will conduct two public scoping meetings as follows:

August 14, 1991 7 p.m.: Weatherford City Hall, Council Conference Room, 303 Palo Pinto Street, Weatherford, Texas.

August 15, 1991 7 p.m.: Santo School Cafeteria, F.M. 2201, Santo, Texas.

ADDRESSES: All interested parties are invited to submit written comments to REA prior to, at, or within 30 days of the scoping meeting in order for comments to be part of the formal record.

Comments should be sent to Mr. Martin G. Seipel, Director, Southwest Area-Electric, Rural Electrification Administration, South Agriculture Building, Washington, DC 20250.

FOR FURTHER INFORMATION CONTACT:

Mr. Dennis Rankin at the above address, telephone (202) 382-8931 or FTS 382-8931, or Mr. Richard E. McCaskill, Executive Vice President and General Manager, Brazos Electric Power Cooperative, Inc., P.O. Box 2585, Waco, Texas 76702-2585, telephone (817) 750-6500.

SUPPLEMENTARY INFORMATION: REA, in order to meet requirements under the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality Regulations (40 CFR part 150), and REA Environmental Policies and Procedures (7 CFR part 1794), intends to conduct public scoping meetings and prepare an Environmental Assessment. This notice is in connection with possible REA approvals relating to a proposal by Brazos for the construction and operation of two 100 MW combustion turbine generating units.

The proposed project will enable Brazos to meet the electrical requirements of its customers during peak periods of usage.

Alternatives to be considered by REA include: (1) No action; (2) conservation and load management; (3) joint participation in the generation project of another utility; (4) alternative methods of generation; and (5) alternative sites.

The public scoping meetings to be conducted by REA will be held to solicit public comments on the proposed project including, but not limited to, the nature of the proposed project, its possible location, alternatives, and any significant issues and environmental concerns that should be addressed in the EA. Requests for additional information concerning the meetings may be directed to either REA or Brazos at the addresses shown above.

Any REA approval will be subject to and contingent upon reaching satisfactory conclusions with respect to the environmental effects of the project and final action will be taken only after compliance with environmental procedures required by NEPA.

Dated: July 11, 1991.

John H. Arnesen,

Assistant Administrator—Electric.

[FR Doc. 91-17034 Filed 7-16-91; 8:45 am]

BILLING CODE 3410-15-M

William H. Farmer, Assistant State Conservationist, Water Resources, 4405 Bland road, suite 205, Raleigh, North Carolina 27609.

No administrative action on implementation of the proposal will be taken until 30 days after the date of this publication in the *Federal Register*.

Dated: July 9, 1991.

William H. Farmer, Jr.,

Assistant State Conservationist.

[FR Doc. 91-17030 Filed 7-16-91; 8:45 am]

BILLING CODE 3410-18-M

Soil Conservation Service

Stewarts Creek-Lovills Creek Watershed, North Carolina-Virginia

AGENCY: Soil Conservation Service, USDA.

ACTION: Notice of a finding of no significant impact.

SUMMARY: Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR part 1500); and the Soil Conservation Service Guidelines (7 CFR part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is not being prepared for the Stewarts Creek-Lovills Creek Watershed, Surry County, North Carolina, and Carroll County, Virginia.

FOR FURTHER INFORMATION CONTACT: Bobbye J. Jones, State Conservationist, Soil Conservation Service, 4405 Bland Road, suite 205, Raleigh, North Carolina 27609, telephone 919/790-2888.

SUPPLEMENTARY INFORMATION: The environmental assessment of this federally assisted action indicates that the project will not cause significant local, regional, or national impacts on the environment. As a result of these findings, Bobbye J. Jones, State Conservationist, has determined that the preparation and review of an environmental impact statement are not needed for this project.

The project concerns a plan for flood control. The planned works of improvement include 3.9 miles of channel enlargement.

The Notice of a Finding of No Significant Impact (FONSI) has been forwarded to the Environmental Protection Agency and to various Federal, State, and local agencies and interested parties. A limited number of copies of the FONSI are available to fill single copy requests at the above address. Basic data developed during the environmental assessment are on file and may be reviewed by contacting

DEPARTMENT OF COMMERCE

Agency Form Under Review by the Office of Management and Budget (OMB)

DOC has submitted to OMB for clearance the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. chapter 35).

Agency: Bureau of Economic Analysis.

Title: Annual Survey of Foreign Direct Investment in the United States.

Form Number: Agency—BE-15; OMB—0608-0034.

Type of Request: Extension of the expiration date of a currently approved collection without any change in the substance or in the method of collection.

Burden: 5,100 respondents; 32,700 reporting hours.

Average Hours Per Response: 6.4 hours.

Needs and Uses: The survey collects data on the financial and operating characteristics of U.S. companies that are foreign owned. Universe estimates are developed from the reported sample data. The data are needed to measure the size of foreign direct investment in the United States, monitor changes in such investment, assess its impact on the U.S. economy, and, based upon this assessment, make informed policy decisions regarding foreign direct investment in the U.S.

Affected Public: Businesses or other for-profit institutions.

Frequency: Annually (except years in which a BE-12 Benchmark Survey is taken).

Respondent's Obligation: Mandatory.

OMB Desk Officer: Marshall Mills 395-7340.

Copies of the above information collection proposal can be obtained by calling or writing DOC Clearance Officer, Edwards Michals, (202) 377-3271, Department of Commerce, Room H5327, 14th and Constitution Avenue, NW., Washington, DC 20230.

Written comments and recommendations for the proposed information collection should be sent to Marshall Mills, OMB Desk Officer, Room 3208, New Executive Office Building, Washington, DC 20503.

Dated: July 12, 1991.

Edward Michals,

Departmental Clearance Officer, Office of Management and Organization.

[FR Doc. 91-17050 Filed 7-16-91; 8:45 am]

BILLING CODE 3510-CW-M

International Trade Administration

[A-423-801, A-405-801, A-427-803, A-428-808, A-412-807]

Postponement of Final Antidumping Duty Determinations: Coated Groundwood Paper From Belgium, Finland, France, Germany and the United Kingdom

AGENCY: Import Administration, International Trade Administration, Commerce.

EFFECTIVE DATE: July 17, 1991.

FOR FURTHER INFORMATION CONTACT: Kate Johnson, Office of Antidumping Investigations, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Washington, DC 20230, at (202) 377-8830.

POSTPONEMENT

This notice informs the public that we have received requests from all respondents to postpone the final determinations in the investigations of coated groundwood paper from Belgium, Finland, France, Germany, and the United Kingdom, in accordance with section 735(a)(2) of the Tariff Act of 1930, as amended (the Act) (19 U.S.C. 1673d(a)(2)). These respondents account for a significant proportion of exports of the subject merchandise from the respective countries to the United States. If exporters who account for a significant proportion of exports of the merchandise under investigation request an extension subsequent to an affirmative preliminary determination, we are required, absent compelling reasons to the contrary, to grant the request. Accordingly, we are postponing the date of the final determinations as to whether sales of coated groundwood paper from Belgium, Finland, France, Germany, and the United Kingdom have occurred at less than fair value until not later than October 28, 1991.

PUBLIC COMMENT

In accordance with 19 CFR 353.38(b), we will hold public hearings to afford interested parties an opportunity to comment on the preliminary determinations in the antidumping duty investigations of coated groundwood paper. Tentatively, the hearings will be held on October 3, 1991, at 9:30 a.m. (France) and at 2 p.m. (Germany), on October 4, 1991, at 9:30 a.m. (Belgium) and at 2 p.m. (the United Kingdom) and on October 7, 1991, at 9:30 a.m. (Finland) at the U.S. Department of Commerce, Room 4830, 14th Street and Constitution Avenue, NW., Washington, DC 20230. Parties should confirm by telephone the time, date, and place of the hearings 48 hours before the scheduled time. In accordance with 19 CFR 353.38, case briefs or other written comments in at least ten copies must be submitted to the Assistant Secretary no later than September 26, 1991, and rebuttal briefs no later than October 1, 1991. In accordance with 19 CFR 353.38(b), oral presentations will be limited to issues raised in the briefs.

The U.S. International Trade Commission is being advised of these postponements, in accordance with section 735(d) of the Act. This notice is published pursuant to section 735(d) of the Act and 19 CFR 353.20(b)(2).

Dated: July 10, 1991.

Eric I. Garfinkel,

Assistant Secretary for Import Administration. [FR Doc. 91-17051 Filed 7-16-91; 8:45 am]

BILLING CODE 3510-DS-M

Minority Business Development Agency

Business Development Center Applications: Bronx, NY

AGENCY: Minority Business Development Agency, Commerce.

ACTION: Notice.

SUMMARY: In accordance with Executive Order 11625, the Minority Business Development Agency (MBDA) is soliciting competitive applications under its Minority Business Development Center (MBDC) program to operate an MBDC for approximately a 3-year period, subject to Agency priorities, recipient performance and the availability of funds. The cost of performance for the first budget period (12 months) is estimated as \$260,000 in Federal funds, and a minimum of \$45,876 in non-Federal (cost sharing) contribution, from December 1, 1991 to November 30, 1992. Cost-sharing contributions, may be in the form of

cash contributions, client fees, in-kind contributions or combinations thereof. The MBDC will operate in the Bronx, N.Y. SMSA geographic service area.

The funding instrument for the MBDC will be a cooperative agreement. Competition is open to individuals, non-profit and for-profit organizations, state and local governments, American Indian tribes and educational institutions.

The MBDC program is designed to provide business development services to the minority business community for the establishment and operation of viable minority businesses. To this end, MBDA funds organizations that can identify and coordinate public and private sector resources on behalf of minority individuals and firms; offer a full range of management and technical assistance; and serve as a conduit of information and assistance regarding minority business.

Applications will be evaluated initially by regional staff on the following criteria: The experience and capabilities of the firm and its staff in addressing the needs of the business community in general and, specifically, the special needs of minority businesses, individuals and organizations (50 points); the resources available to the firm in providing business development services (10 points); the firm's approach (techniques and methodologies) to performing the work requirements included in the application (20 points); and the firm's estimated cost for providing such assistance (20 points). An application must receive at least 70% of the points assigned to any one evaluation criteria category to be considered programmatically acceptable and responsive. The selection of an application for further processing by MBDA will be made by the Director based on a determination of the application most likely to further the purpose of the MBDC program. The application will then be forwarded to the Department for final processing and approval, if appropriate. The Director will consider past performance of the applicant on previous Federal awards.

MBDCs shall be required to contribute at least 15% of the total project cost through non-Federal contributions. To assist them in this effort, MBDCs may charge client fees for management and technical assistance (M&TA) rendered. Based on a standard rate of \$50 per hour, MBDC's will charge client fees at 20% of the total cost for firms with gross sales of \$500,000 or less, and 35% of the total cost for firms with gross sales of over \$500,000.

MBDC's performing satisfactorily may continue to operate after the initial

competitive year for up to 2 additional budget periods. MBDC's with year-to-date "commendable" and "excellent" performance ratings may continue to be funded for up to 3 or 4 additional budget periods, respectively. Under no circumstances shall an MBDC be funded for more than 5 consecutive budget periods without competition. Periodic reviews culminating in year-to-date quantitative and qualitative evaluations will be conducted to determine if funding for the project should continue. Continued funding will be at the discretion of MBDA based on such factors as an MBDC's performance, the availability of funds and the Agency priorities.

Awards under this program shall be subject to all Federal and Departmental regulations, policies, and procedures applicable to Federal assistance awards.

In accordance with OMB Circular A-129, "Managing Federal Credit Programs," applicants who have an outstanding account receivable with the Federal Government may not be considered for funding until these debts have been paid or arrangements satisfactory to the Department of Commerce are made to pay the debt.

Applicants are subject to Governmentwide Debarment and Suspension (Nonprocurement) requirements as stated in 15 CFR Part 26.

The Departmental Grants Officer may terminate any grant/cooperative agreement in whole or in part at any time before the date of completion whenever it is determined that the MBDC has failed to comply with the conditions of the grant/cooperative agreement. Examples of some of the conditions which can cause termination are failure to meet cost-sharing requirements; unsatisfactory performance of MBDC work requirements; and reporting inaccurate or inflated claims of client assistance or client certification. Such inaccurate or inflated claims may be deemed illegal and punishable by law.

On November 18, 1988, Congress enacted the Drug-Free Workplace Act of 1988 (Pub. L. 100-690, title V, subtitle D). The statute requires contractors and grantees of Federal agencies to certify that they will provide a drug-free workplace. Pursuant to these requirements, the applicable certification form must be completed by each applicant as a precondition for receiving Federal grant or cooperative agreement awards.

"Certification for Contracts, Grants, Loans, and Cooperative Agreements" and SF-LLL, the "Disclosure of Lobbying Activities" (if applicable) is required in

accordance with section 319 of Public Law 101-121, which generally prohibits recipients of Federal contracts, grants, and loans from using Legislative Branches of the Federal Government in connection with a specific contract, grant or loan.

CLOSING DATE: The closing date for applications is August 19, 1991. Applications must be postmarked on or before August 19, 1991.

Proposals will be reviewed by the Washington Regional Office. Mailing address for submission is:

ADDRESSES: Gina A. Sanchez, Regional Director, Washington Regional Office, Minority Business Development Agency, 14th & Constitution Ave. NW., room 6711, Washington DC 20230.

FOR FURTHER INFORMATION CONTACT: John F. Iglehart, Regional Director, New York Regional Office at (212) 284-3263.

SUPPLEMENTARY INFORMATION:

Anticipated processing time of this award is 120 days. Executive Order 12372 "Intergovernmental Review of Federal Programs" is not applicable to this program. Questions concerning the preceding information, copies of application kits and applicable regulations can be obtained at the above New York address.

11.800 Minority Business Development, (Catalog of Federal Domestic Assistance).

Dated: July 10, 1991.

John F. Iglehart,
Regional Director, New York Regional Office.
[FR Doc. 91-16976 Filed 7-16-91; 8:45 am]

BILLING CODE 3510-21-M

National Oceanic and Atmospheric Administration

[Docket Number 910639-1139]

Announcement of Opportunities for Funding Research in the National Estuarine Reserve Research System for Fiscal Year 1992

AGENCY: Office of Ocean and Coastal Resource Management (OCRM), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.

ACTION: Notice.

SUMMARY: In accordance with Department of Commerce Administrative Order (DAO) 203-26, this notice solicits proposals for Federal funding under section 315 (e)(1)(B) of the Coastal Zone Management Act of 1972 (CZMA) for research in the National Estuarine Reserve Research System for

Fiscal Year 1992. This notice sets forth what information must be submitted, funding priorities, and selection criteria.

DATES: Pre-proposals must be submitted and be postmarked no later than September 16, 1991. Notification regarding the disposition of the pre-proposals will be issued on or about November 8, 1991. Final proposals must be postmarked no later than January 3, 1992.

FOR FURTHER INFORMATION CONTACT:

Dr. Michael P. Crosby, National Research Coordinator, Sanctuaries and Reserves Division, Office of Ocean and Coastal Resource Management, NOS/NOAA, 1825 Connecticut Avenue, NW, Washington, DC 20235; Attn: FY 92 NERRS Research; 202/606-4126.

SUPPLEMENTARY INFORMATION:

I. Authority and Background

Section 315 of the CZMA, 16 U.S.C. 1461, establishes the National Estuarine Reserve Research System (formerly known as the National Estuarine Sanctuary Program). Subsection 315 (e)(1)(B) authorizes the Sanctuaries and Reserves Division (SRD) of the Office of Ocean and Coastal Resource Management (OCRM), National Oceanic and Atmospheric Administration (NOAA), to make grants to any coastal state or public or private person for purposes of supporting research and monitoring within the NERRS. This program is listed in the Catalog of Federal Domestic Assistance under "Coastal Zone Management Estuarine Research Reserve," Number 11.420.

II. Information on Established National Estuarine Research Reserves

The NERRS consists of carefully selected estuarine areas of the United States which are designated, preserved, and managed for research and educational purposes. The reserves are chosen to reflect regional differences and to include a variety of ecosystem types in accordance with the classification scheme of the national program as presented in 15 CFR part 921 (49 FR 26502-26520).

The uniqueness of each NERRS site lies in its suitability for supporting a wide range of beneficial uses of ecological, economic, recreational, and aesthetic value which are dependent upon maintenance of a healthy ecosystem. Each site provides critical habitat for a wide range of ecologically and commercially important species of fish, shellfish, birds, and aquatic and terrestrial wildlife. However, these varied activities occurring both within and outside the reserves have caused

varying levels of impacts that threaten the health and survival of natural resources. On the national level, these impacts have been classified into five major environmental problem areas: Toxic contamination, eutrophication, pathogen contamination, habitat loss and alteration, and changes in living resources.

Each reserve has been designed to be large enough and protected well enough to ensure its effectiveness as a conservation unit and as a site for long-term research. Since all of the reserves are part of a national system, they collectively provide a unique opportunity to address research questions and estuarine management issues of national significance.

Nineteen national estuarine research reserves have been established:

Weeks Bay, Alabama
Elkhorn Slough, California
Tijuana River, California
Apalachicola River, Florida
Rookery Bay, Florida
Sapelo Island, Georgia
Waimanu Valley, Hawaii
Wells, Maine
Chesapeake Bay, Maryland
Waquoit Bay, Massachusetts
Great Bay, New Hampshire
Hudson River, New York
North Carolina System, North Carolina
Old Woman Creek, Ohio
South Slough, Oregon
Jobos Bay, Puerto Rico
Narragansett Bay, Rhode Island
Chesapeake Bay, Virginia
Padilla Bay, Washington

These reserves' on-site contacts and addresses are provided in appendix I.

III. Availability of Funds

Funds are available on a competitive basis to any state or university, or qualified public or private individual to conduct research within national estuarine research reserves.

Over the past two fiscal years SRD has funded over \$1.1M for research. The approximate range of funding per successful project has been between \$10,000 and \$50,000. Federal funds requested must be matched by at least 30% of the total cost of the project.

Note: the match requirement was changed from 50% to 30% in 1990 with the reauthorization of the CZMA.

The required match must be with cash or the value of goods and services directly benefitting the project in accordance with 15 CFR part 24, "Grants and Cooperative Agreements with State and Local Governments" (see also OMB Circulars A-102, "Uniform Administrative Requirements for Grants-In-Aid to State and Local

Governments"), A-87, A-21, A-122, "Principles for Determining Costs Applicable to Grants and Contracts with State, Local and Federally Recognized Indian Tribal Governments", and A-110, "Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations." It is anticipated that projects receiving funding under this announcement will begin in the spring/summer of 1992. Research funds are normally awarded through a research cooperative agreement. Applicants not familiar with the requirements of a cooperative agreement or who need additional information on application requirements are encouraged to contact the applicable reserve manager or SRD.

Recipients/applicants who have an outstanding accounts receivable with the U.S. Department of Commerce will not receive an award until the debt is paid or arrangements satisfactory to the Department are made to pay the debt. In addition, any researchers who have not submitted acceptable final reports of any previous SRD funded research will be ineligible to receive new awards until final reports are received by SRD.

IV. Purpose and Priorities

Research funds are primarily used to support management-related research that will enhance scientific understanding of reserve environments, provide information needed by reserve managers and coastal zone decision-makers, and improve public awareness of estuaries and estuarine management issues. Research projects may be oriented to specific reserves; however, projects that will benefit more than reserve in the national system will be given a higher emphasis than reserve-specific projects.

Research proposals submitted in response to this announcement must address coastal management issues identified as having regional or national significance, relate them to the National Research Priorities described in this announcement and indicate the appropriate reserve(s). Research projects are normally funded for a year in duration. Proposals for up to three years may be considered if the applicant wishes to submit additional proposals for each succeeding year and has clearly demonstrated the benefits of the research to the reserve and the NERRS. Continuation of multi-year funding is at the discretion of NOAA and will be contingent on such factors as performance and the availability of funds. Although priority funding consideration will be given to proposals that address the broad categories listed below, all topics will not be relevant to

all reserves in the NERRS. The research topic and the reserve must be carefully chosen to ensure that the resource management issues of primary concern to the reserve and the NERRS are addressed. It is thus very important that all prospective proposers contact the appropriate reserve before submitting a proposal responding to this announcement.

A. National Research Priorities

Although large data sets exist for many of the fundamental processes of estuaries, there are significant gaps in the information needed to understand the complex functions of most estuaries. To address this issue, some of the Nation's most capable estuarine researchers gathered in 1984 for the first in a series of national estuarine symposia. Based on the most current developments in scientific protocol, the researchers recommended research directions to enhance our understanding of estuarine processes and functions. This assessment of problematic needs resulted in five categories of research directions: water management, sediment management, nutrients and other chemical inputs, coupling of primary and secondary productivity, and fishery habitat requirements. These research topics have been identified as being a priority to all coastal areas of the United States, including Alaska, Hawaii, the Great Lakes States, Puerto Rico, Guam, and American Samoa.

1. Water Management

Armstrong (1984) defines water management as using "whatever means possible to provide water for beneficial uses." The uses and users of water are many and varied, leading to one of the most important problems currently facing the Nation: Allocation of freshwater resources. The increase in the consumptive use of water by municipal, commercial, industrial, agricultural, and recreational activities competes strongly with the availability of water to bays and estuaries. Changing land use practices near estuaries and their upstream tributaries affect the quantity, quality, and timing of freshwater inflow. Since estuaries, by definition, involve the inflow and mixing of fresh and salt water, these variances may cause significant changes to estuarine productivity. Thus, the relationship between freshwater inflow and estuarine productivity poses a prime research question (Copeland, 1984). However, determining these inflows also depends on our ability to understand how they govern the salinity regime, provide nutrients, couple

primary and secondary productivity, and sustain habitats (Armstrong, 1984). Thus, to answer questions regarding water management, i.e., the allocation of freshwater to estuaries, the following topics are considered to be priority research issues:

- (a) Determining the basis to establish the amounts of inflows needed to estuaries and the reliability of freshwater inflow estimates;
- (b) Establishing the functional relationship between nutrient inflows to the estuary with freshwater inflows and primary and/or secondary productivity;
- (c) Determining the quantitative relationship between freshwater inflow and fisheries production in specific estuaries and regional groups of estuaries;
- (d) Delineating the factors that control the response and recovery of estuarine biological systems to large changes in water input;
- (e) Establishing the role of coastal upwelling in determining estuarine productivity; and
- (f) Preparing nutrient budgets on estuarine systems to clearly elucidate the roles of freshwater inflows, marshes, benthic systems, coastal waters, precipitation, and other sources, and to delineate the importance of each source in providing nutrients and recycling them.

2. Sediment Management

Scubel (1984) states, "Sediment, particularly fine-grained sediment, has had and continues to have, significant impacts on estuarine productivity." Estuarine productivity is basically affected by the amount and quality of the sediments entering the estuary (Copeland, 1984). However, these processes are immensely affected by human activities in the watersheds or estuaries. In addition, long time periods (up to decades and centuries) are required for the movement of sediments into estuaries from drainage basins of major rivers. Though the sediments may originate from external, internal, or marginal sources, external sediments along rivers are most influenced by human activities. However, the effective management of estuarine sediment problems are limited to two ends of the sedimentation process—at the source and at the sink (Schubel, 1984). Thus, the effective management of sediments may depend upon: (1) Reducing sediment inputs through drainage basins through proper soil conservation practices; (2) reducing contaminant input through proper source control; and (3) developing and implementing management strategies for sediment deposited in the estuary. On the other

hand, estuary size as well as estuarine processes are varied. Fine sediments may not always be the most pressing problem in smaller estuaries, such as those found along the West Coast. Sand deposits along coastal sand bars and accumulation of materials from the watershed significantly affect many of these smaller systems (Zedler and Magdych, 1984). In addition, sediment input may not necessarily be harmful to any given estuary as sediment delivery plays an important role in the biological productivity of estuaries (Peterson, 1984).

The major impediment to research in this area is the impractical and infeasible nature of critical experiments on the relationship between ecosystems and major changes in their environment. For instance, it is impractical and infeasible to manipulate tidal flushing, flooding, and large-scale additions or removal of substrates and maintain a control system for comparison. Thus, most of the work conducted to date has been "before-and-after" studies of major events (Copeland, 1984).

It is therefore apparent that rational biological criteria must be used to assess the relative merits of alternative sediment management schemes. However, information gaps must be filled before the criteria can be developed. Priority research topics include:

- (a) Detailed studies of sediment dynamics to include the effects of sedimentation on flushing and sedimentation rates, accumulation rates and changes in sediment composition between points of entry and accumulation, the joint impacts of reduced freshwater inflow and sediment delivery, the impacts of sediment delivery rates, and shallow water sedimentation processes;
- (b) The testing and development of biological models that predict the impacts of sedimentation;
- (c) Characterization of the processes that control absorption and desorption of contaminants and other dissolved substances;
- (d) Assessing the impacts of sedimentation on benthic and mobile fauna;
- (e) Determining the relationship of sediment to habitat types;
- (f) Identifying the optimal balance between the long-term negative impacts of estuarine filling and the short-term positive stimulation of estuarine productivity; and
- (g) Examining the resilience and recovery rates of ecosystems after large-scale sedimentation events.

3. Nutrients and Other Chemical Inputs

With most of the human population of the United States living around estuaries and other coastal areas, estuaries are experiencing increasing nutrient problems. There has also been an exponential increase in the use of inorganic fertilizers during the last 100 years, contributing to increased nutrient loads. Coupling this with the conversion of wetlands to urban and agricultural use overloads the estuary's ability to act as a nutrient sink and increases nutrient levels. As a result, scientists have assumed that the amounts of organic and inorganic nitrogen and phosphorus carried by streams and rivers into estuaries have also increased markedly. However, as Nixon (1984) points out, the "**** lack of adequate long-term data makes it difficult to know if this is true or to make a quantitative assessment of the increase loading over time * * *." It is also noted that nutrients will continue to be a major human-related input to estuaries and coastal waters.

Little is known about how marine ecosystems respond to nutrient additions because most knowledge of the effects of nutrient additions to the marine ecosystem is based on laboratory studies of algal cultures or on short-term experiments involving nutrient additions to plankton communities (Copeland, 1984). However, another concern relates to the effects of chemical inputs into estuaries and coastal areas. Estimates suggest that 70,000 synthetic chemicals are currently in commercial use, with 1000 new ones synthesized annually (Malins, et al., 1984). Eventually, many of these chemicals enter estuaries and other environments, thereby altering those ecosystems. However, the effects of these inputs on the estuarine environment, from the benthic environment to fish and water quality, are not well understood, although evidence indicates that urban-associated estuaries may contain thousands of anthropogenic chemicals that may cause serious, pollutant-related pathological conditions (Malins, et al., 1984). Also, there is little known about the interactions of fertilizers and pesticides in agriculture.

The estuarine-like areas of the Great Lakes are also an important link to the fisheries, as they serve as nursery areas for numerous commercially important species and their prey. They also serve as a trap for many pollutants that could adversely impact the Lakes' ecosystems. All five of the Great Lakes are among the fifteen largest lakes in the world and

possess approximately 95% of the surface freshwater in the United States, making the allocation of freshwater and the enhancement of water quality issues of special importance to this area of the U.S.

In other words, environmental managers presently base their management strategies mostly on provisional data. It is thus important to develop *** focused and integrated multidisciplinary research programs *** (Nixon, 1984). In addressing management issues related to nutrients and chemical inputs, priority research may focus on:

(a) Testing the responses of estuarine ecosystems to combinations of nutrient inputs and recycling by developing ecosystem-level experiments involving microcosms, mesocosms, and field manipulations;

(b) Examining the fate of synthetic chemicals in estuaries through the chemical analysis of sediments; the performance of tissue-chemical, gross pathological and histological analyses; evaluation of community structures; conducting controlled laboratory and *in situ* field studies to identify chemicals responsible for field-observed and other toxic effects and determine their relationships; and developing research protocols to understand the long-term effects of exotic materials on estuarine ecosystems.

4. Coupling of Primary and Secondary Productivity

Estuarine ecosystems are characterized by high levels of primary and secondary production (Teal, 1962; Marinucci, 1982; Odum, 1984), although their theoretical relationship to each other is generally unknown. While there is a theoretical relationship between the two, the documentation and relative importance and ecological efficiencies of the pathways remains unresolved (Odum, 1984). Thus, broadly defined, this coupling includes nearly all food web interactions (Peters and Lewis, 1984).

Food chains in estuarine ecosystems are quantitatively and qualitatively connected. However, a clear understanding of the relationship between the quantity of biomass at one producer level and the quantity and quality of biomass at the next level is lacking. The concept of trophic structures in estuarine ecosystems is more of a food web than a food chain. In addition, the food web trophic structure found in estuaries is generally abbreviated compared to the longer food chains of the ocean and open waters of the Great Lakes. Understanding the fundamental aspects of this issue is

difficult because of the likelihood that a change in one trophic level impacts other portions of the ecosystem by altering the directions or size of energy flow from one component to another.

The lack of documentation on the importance and ecological efficiencies of individual pathways leads to a fundamental management question revolving around the protection or improvement of secondary production by managing primary production (Copeland, 1984). With this concept in mind, many of the most important questions relating to estuarine productivity may revolve around the comparative importance of vascular plant detritus and algae to estuarine trophic structures (Odum, 1984). Related topics are the degree to which coastal fisheries organisms utilize detritus as an energy source and the impact of removing large tracts of detritus-producing areas such as swamps, marshes, and seagrass beds.

Thus, the most important research need in this area is the development of a quantitative relationship between primary and secondary production in estuaries. This requires a multidisciplinary approach to delineate the various food chains and relationships that exist in estuarine ecosystems. Thus, to address the information needs of estuarine managers and scientists, priority research topics should examine:

(a) The comparative trophic importance of vascular plant versus plankton organic matter;

(b) The degree to which coastal fishery organisms utilize detritus as an energy source; and

(c) The impact of removing large tracts of detritus-producing salt marshes and seagrass beds. These may be accomplished through:

(1) The use of multiple isotopes and other techniques to indirectly identify sources of organic carbon for primary consumers in estuaries;

(2) Studies to determine the chemical composition and nutritional status of detritus complexes of different age and particle size;

(3) Laboratory feeding experiments to detail the utilization of vascular plant detritus by consumers;

(4) Growth and ecological efficiency studies in large tanks or small ponds to investigate consumer diets;

(5) Controlled field experiments in ponds to determine the feasibility of detritus aquaculture;

(6) Well-planned "before and after" investigations on the local impact of marsh, mangrove, or seagrass removal on fisheries; and

(7) Field investigations and laboratory experiments to investigate the potential

and realized importance of hypothetical reduced-sulfur food webs.

5. Estuarine Fishery Habitat Requirements

Many studies have documented the value of estuaries as nursery areas for many commercially and recreationally important fish and shellfish species (for example: McHugh, 1967; Tyler, 1971; Bayly, 1975; Pollard, 1981; Deegan and Day, 1984). However, some estuaries support larger fish populations than others. Three major reasons often proposed for estuarine habitat utilization by fish are: (1) Food availability; (2) protection from predators; and (3) a benign abiotic environment (Joseph, 1973). But understanding the role of estuarine habitat and quantitative differences in fisheries production is difficult. Current evidence points to the importance of shallow inshore estuarine areas to fisheries production (Deegan and Day, 1984). In addition, marshes, seagrass beds, and nearshore shallow areas are particularly important fish habitat areas. Yet, major questions related to the specifics of the relationships between habitat and fish production are largely unanswered.

In order to formulate effective management programs, the most important questions revolve around the relationship between estuarine fish production and the quantity and quality of nursery areas in terms of food availability and subsequent growth mortality. A clear understanding of this would be useful for evaluation, design, and mitigation of activities affecting estuaries. To answer the question of why some estuaries are more productive than others, estuarine scientists need to address questions regarding habitat selection, species migration, species residence time, food quality and quantity, and the effects of environmental variations on survival, growth, and fish and shellfish movement. Some specific research topics that need to be addressed include:

(a) Delineation of the characteristics of a good nursery;

(b) Fishery yield per acre of salt marsh and species-specific relationships;

(c) Relationships and mechanisms between fish catch and river discharge, wetland/water ratios, and primary production;

(d) The roles of various sources of primary production and the variance of these sources between estuaries;

(e) The effects of differing primary production sources on fish production;

- (f) The relative contribution of different habitat to total stock;
- (g) Flow requirements for critical life stages;
- (h) Hydrodynamic influences on distribution, abundance, and survival of fishery species;
- (i) Contaminant impacts on estuarine fields; and
- (j) Food as a limiting factor to estuarine fish populations.

B. Guidelines for Proposal Preparation

Applicants for SRD research funds must follow the guidelines presented herein when preparing pre-proposals and proposals for research in national estuarine research reserves. Business managers and grants administrators should also refer to 15 CFR part 24, "Grants and Cooperative Agreements with State and Local Governments", A-87, A-21, A-122, "Principles for Determining Costs Applicable to Grants and Contracts with State, Local and Federally Recognized Indian Tribal Governments", and A-110 "Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations." Pre-proposals and proposals not following these guidelines will be returned to the proposer. All researchers must submit an original and two (2) copies of their pre-proposals to SRD. Applicants that are approved for further review must submit an original and two (2) copies of their full proposals as well.

Applicants are reminded that a false statement on the application may be grounds for denial or termination of funds and grounds for possible punishment by a fine or imprisonment.

1. Pre-proposals

Pre-proposals will be used by SRD to evaluate the applicability of the research plan with regard to the goals of this announcement. Pre-proposals are limited to 12 pages including the cover page, abstract, introduction, objectives, statement of hypothesis, brief methods description, anticipated results and benefits, budget description showing matching funds, and any other information relative to the proposal (e.g., tables, graphs, etc.). A discussion of coordination with other research in progress of proposed would also be helpful. A curriculum vitae for each researcher should be forwarded along with the pre-proposal. Submit 1 original and 2 copies of the pre-proposal to: Dr. Michael P. Crosby, National Research Coordinator, Sanctuaries and Reserve Division, suite 714, 1825 Connecticut Avenue, NW., Washington, DC 20235. All pre-proposals must be postmarked no later than September 16, 1991.

Receipt of all pre-proposals will be acknowledged and a copy sent to the appropriate Reserve Manager. All pre-proposals will be reviewed by the SRD project manager, the Research Coordinator, the Reserve Manager and their research advisory committees. Pre-proposals will be rated using the criteria listed in #4 below, "Proposal Review and Evaluation." Applicants will be notified by mail as to the disposition of their pre-proposals on or about November 8, 1991. Applicants whose research projects are deemed by SRD to warrant further consideration will be requested to submit a full proposal.

2. Full Proposals

Full proposals must be postmarked no later than January 3, 1992. Submit one original and 2 copies of the proposal to the same address as the pre-proposals.

Proposal Content

a. *Cover Sheet.* The applicant must submit as a cover sheet a Standard Form 424 (revised 4/88) with all blocks completed and the SF-424A and SF-424B, Assurances, as applicable. This form is available upon request from the Sanctuaries and Reserves Division, 1825 Connecticut Avenue, NW, suite 714, Washington, DC 20235.

Specification of a proposed starting date does not ensure receiving an award by that date. Therefore, work on a project should not begin before the effective date on the official notification of the award from the NOAA Grants Officer.

A proposal must be signed and dated by the organizational official authorized to contractually obligate the submitting organization. The principal investigator is also signatory.

b. *Table of Contents, Lists of Figures and Tables.* These should list the major contents of the proposal and the appropriate page numbers.

c. *Project Summary.* A 2-3 page project summary must be included. The summary should state the research objectives, scientific methods to be used, the significance of the project to a particular reserve and to the National Estuarine Reserve Research System and the national research priorities, and the amount of funds requested. The summary should include enough information to facilitate an initial review and screening of the project by NOAA. The summary should also be suitable for use in the public press.

d. *Project Description.* The main body of the proposal should be concise, detailed, and include the following components:

(1) *Introduction.* This section should introduce the reviewer to the national

estuarine research reserve environment, the research setting, the relevant coastal management issue(s), the relevant national research priority, the research problem, and the need for the work. This section should include a brief historical narrative leading up to the proposed research, and describe the research problem in the context of significant previous work in the area and in relation to management issues discussed in the reserve management plan or in the research solicitation. This section must include a brief description of current literature and cite appropriate published and unpublished documents.

(2) *Hypotheses.* Based on review and analysis of existing literature and consultations with reserve personnel and scientists knowledgeable of the subject research, hypotheses should be stated which can be tested experimentally or through observational research in the reserve.

(3) *Objectives.* This section should discuss the overall study objectives, the specific research objectives, and the relationship of research project objectives to site-specific and national estuarine research reserve program objectives.

(4) *Methods.* This section should state the method(s) to be used to test the hypotheses and accomplish the specific research objectives including a systematic discussion of what, when, where, and how the data are to be collected, analyzed, and reported. Field and laboratory methods should be statistically valid and repeatable. Methods should be well documented and described in sufficient detail to enable other scientists to evaluate their appropriateness and their possible impact on the environment. Methods chosen should be justified and compared with other methods employed for similar work.

Methods should allow the testing of the hypotheses, but also provide baseline data that may be used in answering related ecological and management questions concerning the sanctuary environment. Measures should be simple and reliable enough to allow comparison with those made at different sites and times by different investigators. If the project is to be long-term (e.g., a monitoring program), the methods selected must be stable enough that it is unlikely they will change drastically over the next 5-10 years. The methods must have proven their utility and sensitivity as indicators for natural or human-induced change. Newly devised or unproven methods should be field-tested to evaluate their soundness.

and likely success before applying for SRD research funds.

Analytical methods and statistical tests applied to the data should be documented, thus providing a rationale for choosing one set of methods over alternatives. Quality control measures also should be documented (e.g., statistical confidence levels, standards of reference, performance requirements, internal evaluation criteria). Indicate by way of discussion how data are to be synthesized, interpreted and integrated into final work products, and how and where the data are to be catalogued and stored for ready retrieval at later dates.

A map clearly showing the study location and any other features of interest must be included. Use a U.S. Geological Survey topographic map, or an equivalent, in constructing the location map for the proposal. Consultation with reserve personnel to identify existing maps is strongly recommended.

(5) Project Significance. In this section, discuss how the proposed research effort will enhance or contribute to improving the state of knowledge of the estuary and assist reserve management decision-making, i.e., why is the proposed research important and how can the results be used to manage estuarine resources? This section must also discuss, in detail, the relation of the proposed research to the research priorities stated in the research announcement. In addition, the applicant must also provide a clear discussion of how the proposed research addresses state and national estuarine and coastal resource management issues. If research findings may be applicable to other sites in the National Estuarine Reserve Research System, this should be given special mention. If the research is to be conducted at more than one reserve, the applicant must provide copies of correspondence with the appropriate reserve managers indicating consultation with the managers and their support for the proposed project.

(6) Milestone Schedule. A milestone schedule is required in the proposal. This schedule should show, in table form opposite the tasks required to accomplish project objectives, anticipated dates for completing field work and data collection, data analysis, progress reports, the draft report, the final report, and other related activities.

(7) Personnel and Project Management. Give a complete description of how the project will be managed, including the name and expertise of the principal investigator and the name(s), expertise, and task assignments of team members. Evidence of ability to perform should be

supported by reference to similar efforts performed. Resumes listing qualifications related to professional and technical personnel should be provided. In an appendix, list each investigator's publications during the past five (5) years. The proposal should discuss and explain any portion of work expected to be subcontracted and identify probable sources.

(8) References. Provide complete references for current literature, research, and other appropriate published and unpublished documents cited in the text of the proposal.

(9) Budget. The applicant may request funds under any of the categories listed below as long as the costs are reasonable and necessary to perform research and are determined to be in accordance with the previously mentioned 15 CFR part 24 and OMB Circulars A-21, A-122, A-87, and A-110. The amount of Federal funds requested must be matched by at least 30% with cash or the value of goods and services, except land, directly benefitting the research project. General guidelines for the non-Federal share are contained in 15 CFR part 24 and OMB Circular A-110.

The budget should contain itemized costs with appropriate narratives justifying proposed expenditures. Budget categories may be broken down as follows, clearly showing both Federal and non-Federal shares:

—Salaries and Wages. Salaries and wages of the principal investigator and other members of the project team constitute direct costs in proportion to the effort devoted to the project. The number of full-time person months or days and the rate of pay (hourly, monthly, or annually) should be indicated. Salaries requested must be consistent with the institution's regular practices. The submitting organization may request that salary data remain confidential information.

—Fringe Benefits. Fringe benefits (i.e., social security, insurance, retirement) may be treated as direct costs as long as this is consistent with the institution's regular practices.

—Equipment. While not the primary purpose of these funds, research funds may be approved for the purchase of major equipment only if the following conditions are met: (a) A lease vs. purchase analysis has been conducted and the findings determine that purchase is the most economical method of procurement; (b) there is a demonstrated need for the equipment to support reserve-sponsored research after the termination of the research award under which the equipment was purchased; and there are

adequate facilities and provisions for housing, storing, protecting, and maintaining the equipment on location at the reserve after the termination of the research award.

Discuss each of these points along with the purpose of the equipment and a justification for its use. Provide a list of equipment to be purchased, leased, or rented by model number and manufacturer, where known. Equipment acquired costing \$300 or more with a life expectancy of 2 years or more becomes the property of the NERR(s) where the research was conducted at the termination of the contract.

—Travel. The type, extent, and estimated cost of travel should be explained and justified in relation to the proposed research. Travel expense is limited to round trip travel to field research locations and should not exceed 40 percent of total direct costs. Travel to conferences will not be approved unless a clear justification is provided.

—Other Direct Costs. Other anticipated costs should be itemized under the following categories: (a) *Materials and Supplies*. The budget should indicate in general terms the types of expendable materials and supplies required and their estimated costs; (b) *Research Vessel or Aircraft Rental*. Include purpose, unit cost, duration of use, and justification; (c) *Laboratory Space Rental*. Funds may be requested for use of laboratory space at research establishments away from the granted institution while conducting studies specifically related to the proposed effort; (d)

Telecommunication Services and Reproduction Costs. Include expenses associated with telephone calls, telex, xeroxing, reprint charges, film duplication, etc.; (e) *Consultant Services and Subcontracts*.

Consultant services should be disclosed and justified in the proposal. Funds may be requested for transportation and subsistence, and for consultant's travel. Travel costs, per diem and other related costs must be listed. Furnish information on consultant's expertise, primary organizational affiliation, daily compensation rate, and number of days of service. Travel should be listed under the travel budget; (f)

Computer Services. The cost of computer services may be requested and must be justified, including data analyses and storage, word processing for report preparation and computer-based retrieval of scientific and technical information.

—Indirect Costs. Include fees and overhead costs based on the negotiated rate agreement by the cognizant agency on behalf of the Federal Government.

Note: It is the policy of the Department of Commerce that indirect costs shall not exceed direct costs.

(10) Requests for Reserve Support Services. On-site reserve personnel sometimes can provide limited logistical support for research projects in the form of manpower, equipment, supplies, etc. Any request for reserve support services should be approved by the reserve manager prior to proposal submission and included as part of the proposal package in the form of written correspondence.

(11) Coordination with Other Research in Progress or Proposed. SRD encourages collaboration and cost-sharing with other investigators to enhance scientific capabilities and avoid unnecessary duplication of effort. Proposals should include a description of how the proposed effort will be coordinated with other research projects that are in progress or proposed, if applicable.

(12) Other Sources of Financial Support. List all current or pending research to which the principal investigator or other key personnel have committed their time during the period of the proposed work, regardless of support. Indicate the level of effort or percentage of time devoted to these projects.

In addition to the required non-federal match, SRD encourages investigators to seek other sources of financial support to supplement Federal funds. If the proposal submitted to SRD is being submitted to other possible sponsors, list them and describe the extent of support being sought. Disclosure of this information will not jeopardize chances for Federal funding.

(13) Permits. The applicant must apply for any applicable state or Federal permits. Attach a copy of the permit application and supporting documentation to the proposal as an appendix. SRD must receive notification of the approval of the permit application before funding can be approved.

3. Submission of Proposals

Proposals for research in the National Estuarine Reserve Research System are solicited annually for award the following fiscal year. Proposal due dates and other pertinent information are contained in the announcement of research opportunities. A list of the appropriate reserve and SRD contact persons is attached to the research

announcement. All proposals sent to SRD must cite and reference the **Federal Register** notice in which the announcement appeared. Proposers must submit an original and two (2) copies of each proposal they submit.

4. Proposal Review and Evaluation

All proposals are thoroughly reviewed by the appropriate SRD headquarters staff, reserve staff and their research advisory committees, and by at least two other outside individuals who are acknowledged experts in the particular field represented by the proposal. Proposers are requested to include the names of five (5) individuals who, in their opinion, are especially well qualified to evaluate the proposal objectively. When a cooperative agreement is awarded, verbatim copies of the reviews, excluding the names of reviewers, are mailed, upon request, to the Principal Investigator/Project Director.

In order to provide for the fair and equitable selection of the most meritorious research projects for support, SRD has established criteria for their review and evaluation. These criteria are intended to be applied to all research proposals in a balanced and judicious manner, in accordance with the objectives and content of each proposal. The criteria used in the peer review process to aid SRD in its final selection of research projects are listed below, together with the elements that constitute each criterion and the relative weight (in parenthesis):

a. **Scientific Merit** (20%). This is used to determine whether the objectives of the proposal or of the observations are important to the field and to assess the likelihood that research will improve the scientific understanding of estuarine processes within the reserve as well as in other similar estuaries.

b. **Technical Approach** (20%). This is used to assess the technical feasibility of the proposed effort, the reasonableness of the hypotheses, the degree to which the proposed timeline is realistic, the appropriateness and scientific validity of the proposed analytical methods, the degree to which the proposal demonstrates an understanding of the reserve environment and management needs, the current state of knowledge in the particular field of research interest, and the total research requirements.

c. **Importance to Reserve Management and to Regional Coastal Management Issues** (15%). This is used to determine its importance to management of the reserve (does it address management issues relevant to the site and the region?) and its suitability for

addressing coastal management issues of regional and/or national importance.

d. **Relevance to National Research Priorities** (15%). This criterion is used to assess the relationship between the objectives of the proposed project and the National Research Priorities established by NOAA.

e. **Institutional Support and Capabilities** (15%). This relates to the extent of institutional support for and commitment to the proposed research and what facilities, equipment, and other resources are available to the principal investigator and key personnel for use in accomplishing the proposed work. Because of the 30% matching requirement, this is an especially important consideration.

f. **Qualifications of P.I. and Key Personnel** (10%). This criterion relates to the experience and past performance of the principal investigator and key personnel, their familiarity with the geographic area of the proposed study, and their publication record.

g. **Budget** (5%). This criterion is used to determine whether the budget is realistic and reasonable for accomplishing the proposed tasks.

5. Reporting Requirements

Awards for research are usually made during the third quarter of the fiscal year. Quarterly performance reports, a draft technical report, and a final technical report are required as conditions of the award.

Performance reports are summaries of all work performed during the preceding quarter and show the overall progress against the milestone schedule in the approved proposal. A statement of the milestones reached, data compiled, and analyses completed must be included. In addition, a summary of any significant technical, manpower, schedule, or cost problems encountered during the preceding quarter, an assessment of their probable impact on the project's approved milestone schedule, and a statement of any corrective action taken or proposed is also required. Also required is a summary of major work activities scheduled for the next quarter and any questions or problems regarding the applicant's work that requires discussion with or resolution by SRD.

The draft and final technical reports are required to be prepared following SRD's "Guidelines for Preparing Technical Reports on Research in National Estuarine Research Reserves" which is appended to the award, but is also available upon request.

6. Further Information

The requirements of Executive Order 12372, "Intergovernmental Review of Federal Programs", are applicable to the awards of grants and cooperative agreements under this notice. However, the requirements of the Executive Order apply to individuals only if a state or local government is the provider of the non-federal funds.

In accordance with the Drug-Free Workplace Act of 1988 (Department of Commerce, 15 CFR part 26), each applicant must make the appropriate certification as a "prior condition" to receiving a grant or cooperative agreement.

Applicants are also subject to the requirements of 15 CFR part 28, "Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-free Workplace (Grants)."

For further information on research opportunities under the National Estuarine Reserve Research System, contact the on-site personnel listed in this text or the Sanctuaries and Reserves Division, Office of Ocean and Coastal Resource Management, 1825 Connecticut Avenue, NW., suite 714, Washington, DC 20235 (202) 673-5126.

C. General Requirements

Cooperative agreements for Federal financial assistance are subject to all Federal and Departmental regulations, policies, and procedures applicable to Federal assistance awards, such as compliance with the Civil Rights Act of 1964, title IX of the Education Amendments of 1972, and other laws and regulations prohibiting discrimination; patent and copyright requirements; cost sharing; the use of U.S. flag carriers for international travel; and the use of foreign currency as appropriate to accomplish the objectives of a project.

D. Adherence to Original Objectives

The Principal Investigator should feel free to pursue important leads that may arise during the conduct of the project. SRD support will not be jeopardized if the Principal Investigator discontinues or materially modifies the originally planned line of inquiry in favor of one that appears to have more promise. SRD must, however, give prior approval when a modification would result in a major deviation from the original objective(s) or project scope, including activities specifically excluded from support when the award has made.

E. Adherence to Original Budget Estimates

The cooperative agreement award includes or refers to a budget that lists the items for which funds are provided. All budget transfers are subject to the provisions of 15 CFR Part 24 and OMB Circular A-110 as appropriate. While the Principal Investigator has reasonable flexibility to alter direction of the project when changes seem advantageous, the recipient organization must consider the effect of any budget reallocations on the direct cost portions of the budget, and must observe the conditions prescribed by the award. Any change in the budget that will affect the match portion of the award must be approved in writing by the NOAA Grants Officer. When any budget change requires the NOAA Grants Officer approval, two copies of the request, signed by the Principal Investigator and by the recipient organization's authorized official, should be sent to the assigned SRD Contracting Officer's Technical Representative. The request should clearly state which budget items are to be changed and by what amounts and should explain the reasons for the change.

F. Changes in Personnel

Written NOAA Grants Officer approval is required for any permanent change in Principal Investigator(s) or project director(s) or for any temporary change in excess of three (3) months, such as an investigator taking sabbatical leave. Further, SRD must be informed when it appears that a Principal Investigator will devote substantially more or less effort to the work than anticipated in the approved proposal. Written prior approval is also required for any change in senior personnel specifically named in the proposal and for the addition of senior personnel not named in the proposal.

G. Transfer of Principal Investigator

When a Principal Investigator plans to leave an institution during the course of an award, the institution has the prerogative to nominate a substitute PI or request that the award be terminated and closed out. Substitute PI's are subject to written NOAA Grants Officer approval. In those cases where a particular PI's participation is integral to a given project and the PI's original and new institution agree, SRD will request a transfer of the cooperative agreement and the assignment of remaining unobligated funds to the PI's new institution.

H. Subcontracts

Subcontracts that become necessary after a cooperative agreement has been made must be submitted to SRD for approval. The proposed performance statement and budget, a statement indicating the basis for selection of the contractor, and a justification of the proposed arrangement must be provided.

I. Suspension or Termination of Cooperative Agreements

SRD cooperative agreements may be suspended or terminated in accordance with the procedures contained in the General Grant Conditions. Cooperative agreements may also be terminated by mutual agreement. Termination by mutual agreement shall not affect any commitment or cooperative agreement funds that, in the judgement of SRD and the recipient, had become firm before the effective date of the termination.

J. Proposals as Public Record

A proposal that results in a SRD cooperative agreement becomes part of the record of the transaction and will be available to the public, upon written request, except as described below. Information or material that SRD and the applicant or recipient mutually agree to be of a privileged nature will be held in confidence to the extent permitted by the Freedom of Information Act (FOIA), 5 U.S.C. 552, and other relevant laws. Without assuming any liability for inadvertent disclosure, SRD will seek to limit dissemination of such information to its personnel and, when necessary for evaluation of the proposal, to outside reviewers. Accordingly, any privileged information the applicant views as confidential should be in a separate section of the proposal and be labeled with an accompanying statement bearing a legend such as: "The following is confidential information that the proposing entity requests not to be released to persons outside the Government, except for purposes of evaluation." Appropriate labeling in the application aids identification of what may be specifically prohibited from disclosure by statute. In accordance with Department of Commerce Administrative Order 203-26 (May 15, 1985), if a decision has been made not to fund an application containing information marked "confidential," "proprietary," "trade secret," or the like, the proposal shall be returned promptly to the sender.

A proposal that does not contain confidential information and does not result in a SRD cooperative agreement will be retained by SRD but will be

released to the public only with the consent of the proposer or to the extent required by FOIA and other relevant laws. Portions of proposals resulting in awards that contain descriptions of inventions in which either the Government or the recipient owns or may own a right, title, or interest (including a nonexclusive license) will not normally be made available to the public until after reasonable time has been allowed for filing patent application. It is the policy of SRD to notify the recipient of receipt of requests for copies of funded proposals so that the recipient may advise SRD of such inventions described in the proposal.

K. Inventions and Copyrightable Materials

Each SRD cooperative agreement in support of research may be subject to a patent rights clause. Normally, recipients may elect to retain principal rights to their employees' inventions, subject to certain conditions set forth in the Federal Acquisition Circular 84-27. Each NOAA cooperative agreement may be subject to several conditions affecting copyrightable material (reports, publications, software, etc.) produced in the performance of work under the cooperative agreement. Normally, recipients may own or permit others to own most rights to such material, with the Government receiving the right to use the material for Government purposes.

SRD encourages dissemination, especially through publication in refereed journals and similar media of research performed under its cooperative agreements. SRD may arrange for the publication of outstanding SRD-funded research projects in its NOAA Technical Memorandum Series and disseminate through the National Technical Information Service (NTIS) of the U.S. Department of Commerce.

L. Classification

The Under Secretary for Oceans and Atmosphere, NOAA, determined that this notice is not a major action requiring a regulatory impact analysis under Executive Order 12291 because it is not likely to result in (1) An annual effect on the economy of \$100 million or more; (2) a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions; or (3) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export

markets. Prior notice and an opportunity for public comment are not required by the Administrative Procedure Act or any other law for this notice concerning grants, benefits and contracts. Therefore, a regulatory flexibility analysis is not required for purposes of the Regulatory Flexibility Act.

This action is categorically excluded from the requirement to prepare an environmental assessment by NOAA Directive 02-10.

This notice does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 12612.

This notice contains a collection of information requirement subject to the Paperwork Reduction Act. The collection of this information has been approved by the Office of Management and Budget, OMB Control Number 0648-0121.

(Federal Domestic Assistance Catalog Number 11.420 National Estuarine Reserve Research System

Dated: July 11, 1991.

RADM J. Austin Yeager,

Acting Assistant Administrator for Ocean Service and Coastal Zone Management.

Appendix I. NERRS On-Site Management Personnel

Alabama

Weeks Bay National Estuarine Research Reserve, Manager, 10938-B U.S. Highway 98, Fairhope, AL 36532 (205) 928-9792.

California

Elkhorn Slough National Estuarine Research Reserve, Steve Kimple, Manager, 1700 Elkhorn Road, Watsonville, CA 95076 (408) 728-0560.

Mark Silberstein, Elkhorn Slough Foundation, P.O. Box 267, Moss Landing, CA 95039 (408) 728-5939.

Tijuana River National Estuarine Research Reserve, Paul Jorgenson, Manager, 301 Caspian Way, Imperial Beach, CA 92032 (619) 575-3613.

Florida

Apalachicola River National Estuarine Research Reserve, Woodard Miley II, Manager, 261 7th Street, Apalachicola, FL 32320 (904) 653-8063.

Rookery Bay National Estuarine Research Reserve, Gary Lytton, Manager, 10 Shell Island Road, Naples, FL 33942 (813) 775-8845.

Georgia

Sapelo Island National Estuarine Research Reserve, Bob Monroe, Manager, Dept. of Natural Resources, P.O. Box 19, Sapelo Island GA 31327 (912) 485-2251.

Hawaii

Waimanu Valley National Estuarine Research Reserve, Robert Lee, Manager, Dept. of Land and Natural Resources, P.O.

Box 821, Honolulu, Hawaii 96809 (808) 548-7417.

Maine

Wells National Estuarine Research Reserve, James List, Manager, RR #2, Box 806, Wells, ME 04090 (207) 646-1555.

Maryland

Chesapeake Bay National Estuarine Research Reserve, Mary Ellen Dore, Manager, Dept. of Natural Resources, Tawes State Office Building B-3, 580 Taylor Avenue, Annapolis, MD 21401 (301) 974-2784.

Massachusetts

Waquoit Bay National Estuarine Research Reserve, Christine Gault, Manager, Dept. of Environmental Management, P.O. Box 92W, Waquoit, MA 02536 (508) 457-0495.

New Hampshire

Great Bay National Estuarine Research Reserve, Peter Wellenberger, Manager, New Hampshire Fish and Game Department, 37 Concord Road, Durham, NH 03824 (603) 868-1095.

New York

Hudson River National Estuarine Research Reserve, Elizabeth Blair, Manager, c/o Bard College Field Station, Annandale-on-Hudson, NY 12504 (914) 758-5193.

North Carolina

North Carolina National Estuarine Research Reserve, John Taggart, Manager, University of North Carolina at Wilmington, 7205 Wrightsville Avenue, Wilmington, NC 28403 (919) 256-8856.

Ohio

Old Woman Creek National Estuarine Research Reserve, Eugene Wright, Manager, 2514 Cleveland Road, East Huron, OH 44839 (419) 433-4601.

Oregon

South Slough National Estuarine Research Reserve, Michael Graybill, Manager, P.O. Box 5417, Charleston, OR 97420 (503) 888-5558.

Puerto Rico

Jobos Bay National Estuarine Research Reserve, Anaisa Delgado, Manager, Dept. of Natural Resources, P.O. Box 1170, Guayama, PR 00655 (809) 864-01015.

Rhode Island

Narragansett Bay National Estuarine Research Reserve, Al Beck, Manager, Dept. of Environmental Management, Box 151, Prudence Island, RI 02872 (401) 683-6780.

Virginia

Chesapeake Bay National Estuarine Research Reserve in Virginia, Carroll Curtis, Manager, Virginia Institute of Marine Science, Gloucester Point, VA 23062 (804) 642-7135.

Washington

Padilla Bay National Estuarine Research Reserve, Terry Stevens, Manager, 1043

Bayview-Edison Road, Mt. Vernon, WA 98273 [206] 428-1558.
 [FR Doc. 91-16934 Filed 7-16-91; 8:45 am]
 BILLING CODE 3510-08-M

Western Pacific Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service, NOAA, Commerce.

The Western Pacific Fishery Management Council's Pelagics Indigenous Rights Committee will meet on July 25, 1991, at the Western Pacific Regional Fishery Management Council Office, 1164 Bishop Street, suite 1405, Honolulu, HI. The meeting will begin at 9 a.m.

The agenda is as follows:

- (1) review a discussion paper on preferential rights issues and the Magnuson Fishery Conservation Management Act, and
- (2) complete development of indigenous rights preferential exemption and related criteria for incorporation in Amendment #5 of the Pelagics Fishery Management Plan.

For more information contact Kitty M. Simonds, Executive Director, Western Pacific Fishery Management Council, 1164 Bishop Street, suite 1405, Honolulu, HI 96813; telephone: (808) 523-1368.

Dated: July 11, 1991.

David S. Crestin,

Deputy Director, Office of Fisheries Conservation and Management, National Marine Fisheries Service.

[FR Doc. 91-16995 Filed 7-16-91; 8:45 am]

BILLING CODE 3510-22-M

Patent and Trademark Office

[Docket No. 910235-1173]

Termination of Status of International Depository Authority Under Budapest Treaty

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice.

SUMMARY: Notice is hereby given that In Vitro International, Inc.'s status as an international depository authority is terminated effective September 25, 1991.

ADDRESSES: Questions should be submitted to H. Dieter Hoinkes, Office of Legislation and International Affairs, Box 4, Patent and Trademark Office, Washington, DC 20231; telephone (703) 557-3065.

FOR FURTHER INFORMATION CONTACT: H. Dieter Hoinkes, Office of Legislation and International Affairs, (703) 557-3065.

SUPPLEMENTARY INFORMATION: Since November 30, 1983, In Vitro

International, Inc. (IVI), OF Linthicum, Maryland, has been recognized as an international depository authority under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure. The Patent and Trademark Office has received a letter from Dr. Rex A. D'Agostino, President of IVI, dated May 24, 1991, stating that IVI can no longer continue to perform its functions as an international depository authority under the Budapest Treaty.

By letter dated June 25, 1991, the Patent and Trademark Office has notified the Director General of the World Intellectual Property Organization that "the United States withdraws its declaration of assurances made on behalf of IVI on September 9, 1983". As a consequence, the termination of the status of IVI as an international depository authority takes effect on September 25, 1991.

All deposits stored with IVI under the Budapest Treaty were transferred on June 20, 1991, to a substitute authority, which is the American Type Culture Collection (ATCC), 12301 Parklawn Drive, Rockville, Maryland, 20852, (Telephone No. (301) 881-2600). All mail or other communications addressed to IVI regarding those deposits, including all files and other relevant information, have also been transferred to ATCC. In its capacity as a substitute authority, ATCC has agreed to store all deposits transferred from IVI for an initial period of not less than three months from July 5, 1991, the date of first notice in the *Federal Register* of IVI's termination as an international depository authority. Patent owners and applicants who wish to preserve their date of original deposit must contact ATCC by October 5, 1991, to make arrangements to pay ATCC's fee for continued maintenance and storage of their deposits past the initial storage period. ATCC will not accept responsibility for continued storage of deposits in respect of which depositors have failed to make appropriate arrangement by October 5, 1991.

For further information, contact H. Dieter Hoinkes, Office of Legislation and International Affairs, Box 4, Patent and Trademark Office, Washington, DC 20231; telephone (703) 557-3065.

Dated: July 10, 1991.

Harry F. Manbeck, Jr.,

Assistant Secretary and Commissioner of Patents and Trademarks.

[FR Doc. 91-16998 Filed 7-16-91; 8:45 am]

BILLING CODE 3510-16-M

COMMITTEE FOR THE IMPLEMENTATION OF TEXTILE AGREEMENTS

Announcement of Import Restraint Limits for Certain Cotton, Wool, Man-Made Fiber, Silk Blend and Other Vegetable Fiber Textiles and Textile Products Produced or Manufactured in Thailand

July 11, 1991.

AGENCY: Committee for the Implementation of Textile Agreements (CITA).

ACTION: Issuing a directive to the Commissioner of Customs establishing limits for the 1991 agreement year.

EFFECTIVE DATE: July 19, 1991.

FOR FURTHER INFORMATION CONTACT:

Ross Arnold, International Trade Specialist, Office of Textiles and Apparel, U.S. Department of Commerce, (202) 377-4212. For information on the quota status of these limits, refer to the Quota Status Reports posted on the bulletin boards of each Customs port or call (202) 343-6581. For information on embargoes and quota re-openings, call (202) 377-3715.

SUPPLEMENTARY INFORMATION:

Authority: Executive Order 11651 of March 3, 1972, as amended; section 204 of the Agricultural Act of 1956, as amended (7 U.S.C. 1854).

In a Memorandum of Understanding (MOU) dated June 28, 1991 between the Governments of the United States and Thailand, agreement was reached to establish a new bilateral agreement for certain cotton, wool, man-made fiber, silk blend and other vegetable fiber textiles and textile products, produced or manufactured in Thailand and exported during three consecutive one-year periods beginning on January 1, 1991 and extending through December 31, 1993. A formal exchange of notes will follow. The existing visa arrangement will be amended at a later date.

In the letter published below, the Chairman of CITA directs the Commissioner of Customs to establish limits for the first agreement period beginning on January 1, 1991 and extending through December 31, 1991.

A description of the textile and apparel categories in terms of HTS numbers is available in the CORRELATION: Textile and Apparel Categories with the Harmonized Tariff Schedule of the United States (see *Federal Register* notice 55 FR 50756, published on December 10, 1990).

The letter to the Commissioner of Customs and the actions taken pursuant

to it are not designed to implement all of the provisions of the MOU, but are designed to assist only in the implementation of certain of its provisions.

Auggie D. Tantillo,
Chairman, Committee for the Implementation of Textile Agreements.

Committee for the Implementation of Textile Agreements

July 11, 1991.

Commissioner of Customs,
Department of the Treasury, Washington, DC
20229.

Dear Commissioner: This directive cancels and supersedes all monitoring and any current or previous restraints that extend into 1991 for Categories 201, 218, 220-229, 313, 314, 315, 336/636, 340/640, 351/651, 360, 361, 362, 369-L¹, 369-O², 400-414, 464-469, 600, 603, 606, 614, 617, 618, 621, 622, 624, 638/639, 647/648, 665, 666, 669-P³, 669-O⁴, 670, 800, 810 and 863-899 (see directives dated April 17, 1990, June 11, 1990, June 13, 1990, November 15, 1990, December 17, 1990, February 14, 1991, March 19, 1991 and March 20, 1991).

You are directed to retain calendar year 1991 monitoring data, with the exception of the aforementioned categories, based on date of export. These charges shall be applied to the restraint limits established in this directive.

Under the terms of section 204 of the Agricultural Act of 1956, as amended (7 U.S.C. 1854), and the Arrangement Regarding International Trade in Textiles done at Geneva on December 20, 1973, as further extended on July 31, 1986; pursuant to the Memorandum of Understanding dated June 28, 1991, between the Governments of the United States and Thailand; and in accordance with the provisions of Executive Order 11651 of March 3, 1972, as amended, you are directed to prohibit, effective on July 19, 1991, entry into the United States for consumption and withdrawal from warehouse for consumption of cotton, wool, man-made fiber, silk blend and other vegetable fiber textiles and textile products in the following categories, produced or manufactured in Thailand and exported during the twelve-month period beginning on January 1, 1991 and extending through December 31, 1991, in excess of the following levels of restraint:

¹ Category 369-L: only HTS numbers 4202.12.4000, 4202.12.8020, 4202.12.8060, 4202.92.1500, 4202.92.3015 and 4202.92.6000.

² Category 369-O: all HTS numbers except: 6302.60.0010, 6302.91.0005, 6302.91.0045 (Category 369-D); 4202.12.4000, 4202.12.8020, 4202.12.8060, 4202.92.1500, 4202.92.3015 and 4202.92.6000 (Category 369-L).

³ Category 669-P: only HTS numbers 6305.31.0010, 6305.31.0020 and 6305.39.0000.

⁴ Category 669-O: all HTS numbers except 6305.31.0010, 6305.31.0020 and 6305.39.0000 (Category 669-P).

Category	Twelve-month restraint limit *
Levels in Group I	
200	750,000 kilograms.
219	4,000,000 square meters.
300	3,000,000 kilograms.
301-P ^b	3,000,000 kilograms.
301-O ^c	600,000 kilograms.
313/314/315	63,000,000 square meters of which not more than 14,000,000 square meters shall be in Category 313, not more than 32,000,000 square meters shall be in Category 314 and not more than 20,000,000 square meters shall be in Category 315.
317/326	7,750,000 square meters.
363	13,000,000 numbers.
369-D ^d	143,000 kilograms.
369-S ^e	200,000 kilograms.
604	450,000 kilograms of which not more than 300,000 kilograms shall be in Category 604-A ^f .
607	2,000,000 kilograms.
611	12,000,000 square meters.
613/614/615	27,500,000 square meters of which not more than 16,000,000 square meters shall be in Category 614 and not more than 16,000,000 square meters shall be in Categories 613/615.
619	4,500,000 square meters.
620	4,500,000 square meters.
625/626/627/628/629	8,000,000 square meters of which not more than 7,000,000 square meters shall be in Category 625.
Group II	
237, 239, 330-359, 431-459, 630-659 and 831-859, as a group.	180,000,000 square meters equivalent.
Sublevels in Group II	
331/631	1,091,614 dozen pairs.
334/634	390,000 dozen.
335/635/835	310,000 dozen.
336/636	200,000 dozen.
338/339	1,400,000 dozen.
340	180,000 dozen.
341/641	425,000 dozen.
342/642	370,000 dozen.
345	190,000 dozen.
347/348/847	475,000 dozen.
351/651	150,000 dozen.
359-H/659-H ^g	720,000 kilograms.
434	11,000 dozen.
438	16,500 dozen.
442	19,160 dozen.
638/639	1,650,000 dozen.
640	330,000 dozen.
645/646	200,000 dozen.
647/648	712,000 dozen.

*The limits have not been adjusted to account for any imports exported after December 31, 1990.

^b Category 301-P: only HTS numbers 5206.21.0000, 5206.22.0000, 5206.23.0000, 5206.24.0000, 5206.25.0000, 5206.41.0000, 5206.42.0000, 5206.43.0000, 5206.44.0000 and 5206.45.0000.

^c Category 301-O: only HTS numbers 5205.21.0000, 5205.22.0000, 5205.23.0000, 5205.24.0000, 5205.25.0000, 5205.41.0000, 5205.42.0000, 5205.43.0000, 5205.44.0000 and 5205.45.0000.

^d Category 369-D: only HTS numbers 6302.60.0010, 6302.91.0005 and 6302.91.0045.

^e Category 369-S: only HTS number 6307.10.2005.

^f Category 604-A: only HTS number 5509.32.0000.

^g Category 359-H: only HTS numbers 6505.90.1540 and 6505.90.2060; Category 659-H:

only HTS numbers 6502.00.9030, 6504.00.9015, 6504.00.9060, 6505.90.5090, 6505.90.6090, 6505.90.7090 and 6505.90.8090.

You are directed to charge the following amounts to the categories listed below. These charges are for goods imported during the periods January 1, 1991 through April 30, 1991, for Category 847, and January 1, 1991 through June 30, 1991, for the remaining categories.

Category	Amount to be charged
In Group I	
313	1,602,234 square meters.
314	7,500,405 square meters.
315	5,486,122 square meters.
369-S*	-0-.
614	6,016,311 square meters.
In Group II	
336	11,509 dozen.
340	47,838 dozen.
351	1,238 dozen.
636	9,041 dozen.
638	99,161 dozen.
639	547,428 dozen.
640	47,286 dozen.
647	22,878 dozen.
648	65,531 dozen.
651	14 dozen.
847	42,207 dozen.

* Category 369-S: only HTS number 6307.10.2005.

The limits established in this directive may be adjusted in the future pursuant to the provisions of the bilateral agreement between the Governments of the United States and Thailand.

The conversion factors are 11.5 for Categories 359-H/659-H and 12.96 for Categories 638/639.

In carrying out the above directions, the Commissioner of Customs should construe entry into the United States for consumption to include entry for consumption into the Commonwealth of Puerto Rico.

The Committee for the Implementation of Textile Agreements has determined that these actions fall within the foreign affairs exception of the rulemaking provisions of 5 U.S.C. 553(a)(1).

Sincerely,
Auggie D. Tantillo,

Chairman, Committee for the Implementation of Textile Agreements.

[FR Doc. 91-16933 Filed 7-16-91; 8:45 am]

BILLING CODE 3510-DR-F

COMMODITY FUTURES TRADING COMMISSION

Chicago Board of Trade Proposed Futures Contract

AGENCY: Commodity Futures Trading Commission.

ACTION: Notice of availability of the terms and conditions of proposed commodity futures contract.

SUMMARY: The Chicago Board of Trade (CBT or Exchange) has applied for designation as a contract market in

anhydrous ammonia futures. The Director of the Division of Economic Analysis (Division) of the Commission, acting pursuant to the authority delegated by Commission Regulation 140.96, has determined that publication of the proposal for comment is in the public interest, will assist the Commission in considering the views of interested persons, and is consistent with the purposes of the Commodity Exchange Act.

DATES: Comments must be received on or before August 16, 1991.

ADDRESSES: Interested persons should submit their views and comments to Jean A. Webb, Secretary, Commodity Futures Trading Commission, 2033 K Street NW., Washington, DC 20581. Reference should be made to the anhydrous ammonia futures contract.

FOR FURTHER INFORMATION CONTACT: Please contact Joseph Storer of the Division of Economic Analysis, Commodity Futures Trading Commission, 2033 K Street NW., Washington, DC 20581, telephone 202-254-7303.

SUPPLEMENTARY INFORMATION: Copies of the terms and conditions of the proposed contract will be available for inspection at the Office of the Secretariat, Commodity Futures Trading Commission, 2033 K Streets, NW., Washington, DC 20581. Copies of the terms and conditions can be obtained through the Office of the Secretariat by mail at the above address or by phone at (202) 254-6314.

Other materials submitted by the CBT in support of the application for contract market designation may be available upon request pursuant to the Freedom of Information Act (5 U.S.C. 552) and the Commission's regulations thereunder (17 CFR part 145 (1987)), except to the extent they are entitled to confidential treatment as set forth in 17 CFR 145 and 145.9. Requests for copies of such materials should be made to the FOI, Privacy and Sunshine Act Compliance Staff of the Office of the Secretariat at the Commission's headquarters in accordance with 17 CFR 145.7 and 145.8.

Any person interested in submitting written data, views, or arguments on the terms and conditions of the proposed contract, or with respect to other materials submitted by the CBT in support of the application, should send such comments to Jean A. Webb, Secretary, Commodity Futures Trading Commission, 2033 K Street, NW., Washington, DC 20581 by the specified date.

Issued in Washington, DC, on July 11, 1991.
Gerald Gay,
Director.
[FR Doc. 91-16936 Filed 7-16-91; 8:45 am]
BILLING CODE 6351-01-M

DEPARTMENT OF DEFENSE

Department of the Army

Domestic and International Personal Property Programs: Proposed Changes

AGENCY: Military Traffic Management Command, DOD.

ACTION: Notice of proposed letter of intent form.

SUMMARY: The Military Traffic Management Command (MTMC) is proposing changes to Letter of Intent (LOI) procedures and requirements for the Domestic and International Through Government Bill of Lading (ITGBL) programs. These programs are used to move household goods and unaccompanied baggage shipments for Department of Defense sponsored military and civilian personnel.

EFFECTIVE DATE: September 16, 1991.

FOR FURTHER INFORMATION CONTACT: Commander, U.S. Military Traffic Management Command, ATTN: MTPP-CA/Ms. Rosemarie Guzzardo, 5611 Columbia Pike, Falls Church, VA 22041-5050, (703) 756-1190. Comments will also be mailed to this address.

SUPPLEMENTARY INFORMATION: The Military Traffic Management Command's requirements and procedures for Letter(s) of Intent are outlined in the "How To Do Business in the Department of Defense Personal Property Program" pamphlet, page 12, and the DoD 4500.34R, Personal Property Traffic Management Regulation Chapter 2, B. 2., and appendices A and B. The Military Traffic Management Command requires each participating carrier in the above programs to place an LOI on file at the personal property shipping office they wish to serve. The proposed change is limited to the establishment and implementation of a standard form. The proposed change will clarify and simplify LOI administration and automation processes and procedures and reduce the administrative burden at all levels, by establishing a standard LOI form to be submitted by carriers. In addition, the new form will be integrated with supporting automation systems.

Proposed Changes: Proposed LOI form and completion instructions are available, upon request, from Commander, U.S. Military Traffic

Management Command, ATTN: MTPP-CA, 5611 Columbia Pike, Falls Church, VA 22041-5050.

Kenneth L. Denton,

Alternate Army Federal Register Liaison Officer.

[FR Doc. 91-16991 Filed 7-16-91; 8:45 am]

BILLING CODE 3710-08-M

Customs Clearance and Movement of DOD Personal Property Shipments in Bond

AGENCY: Military Traffic Management Command, DOD.

ACTION: Advance notice.

SUMMARY: The Military Traffic Management Command (MTMC) is proposing changing the criteria for determining responsibility for assessing storage, waiting time, and handling charges associated with U.S. Customs clearance procedures. This procedure is outlined in the International Personal Property Rate Solicitation, I-2. Items 432b(1) and 433b(1). The proposed change will eliminate a misleading statement regarding failure of the origin transportation officer furnishing acceptable customs documents. The impact of this change will place the entire responsibility for this variance in rate charges on the Customs official's determination.

DATES: Comments must be received by 31 July 1991.

FOR FURTHER INFORMATION CONTACT: Mike Milward, (703) 756-2383.

ADDRESSES: Comments will be mailed to headquarters, Military Traffic Management Command, ATTN: MTPP-CI, 5611 Columbia Pike, Falls Church, VA 22041-5050.

SUPPLEMENTARY INFORMATION:

a. The first sentence of Item 432b(1) will be changed to read as follows:

"Storage, waiting time, and/or handling charges, caused by refusal of customs officials to clear a shipment, will be billed at charges provided in this solicitation when performed by the carrier."

b. Item 433b(1) will be changed to read as follows:

"Storage, waiting time, and/or handling charges, caused by refusal of customs officials to clear a shipment, will be billed at charges provided in this solicitation when performed by the carrier, supported by paid, third party invoices which reference applicable rate schedules and/or tariffs when charges

are assessed in accordance with such publications.

Kenneth L. Denton,

Alternate Army Federal Register Liaison Officer.

[FR Doc. 91-16505 Filed 7-16-91; 8:45 am]

BILLING CODE 3710-08-M

Department of the Navy

CNO Executive Panel; Closed Meeting

Pursuant to the provisions of the Federal Advisory Committee Act (5 U.S.C. app. 2), notice is hereby given that the Chief of Naval Operations (CNO) Executive Panel Defense Subpanel Task Force will meet August 22, 1991, from 9 a.m. to 5 p.m., in the CNO's Conference Room, Pentagon, 4E630, Washington, DC. This session will be closed to the public.

The purpose of this meeting is to discuss policy and budgetary matters of immediate Navy interest. The entire agenda for the meeting will consist of discussions of key issues regarding national security, maritime defense needs, defense policy, planning, and budgetary matters of immediate Navy interest in the aftermath of Desert Shield/Storm and its impact on Congressional action. These matters constitute classified information that is specifically authorized by Executive Order to be kept secret in the interest of national defense and are, in fact, properly classified pursuant to such Executive Order. Accordingly, the Secretary of the Navy has determined in writing that the public interest requires that all sessions of the meeting be closed to the public because they will be concerned with matters listed in section 552b(c)(1) of title 5, United States Code.

For further information concerning this meeting, contact: Judith A. Holden, Executive Secretary to the CNO Executive Panel, 4401 Ford Avenue, room 601, Alexandria, Virginia 22302-0268, Phone (703) 756-1205.

Dated: July 9, 1991.

Wayne T. Baucino,

*Lieutenant, JAGC, U.S. Naval Reserve,
Alternate Federal Register Liaison Officer.*

[FR Doc. 91-16937 Filed 7-16-91; 8:45 am]

BILLING CODE 3810-AE-M

DEPARTMENT OF EDUCATION

[CFDA No. 84.116]

Fund for the Improvement of Postsecondary Education—Minority Teacher Training Pilot Project

Notice inviting applications for new award for Fiscal Year 1991.

Purpose of Program: The purpose of the Fund is to assist educational institutions and agencies in improving postsecondary educational opportunities.

Eligible Applicants: Institutions of postsecondary education, a combination of institutions of postsecondary education, and other public and private educational institutions and agencies are eligible to receive an award.

Deadline for Transmittal of Applications: August 16, 1991.

Deadline for Intergovernmental Review: September 16, 1991.

Applications Available: July 16, 1991.

Available Funds: \$975,987.

Estimated Range of Awards: N/A.

Estimated Average Size of Award:

\$975,987.

Estimated Number of Awards: 1.

Note: The Department is not bound by any estimates in this notice.

Project Period: Up to 12 months.

Applicable Regulations: (a) The Education Department General Administrative Regulations (EDGAR) in 34 CFR parts 74, 75, 77, 79, 82, 85, and 86; and (b) the regulations for this program in 34 CFR part 630, Fund for the Improvement of Postsecondary Education (FIPSE).

SUPPLEMENTARY INFORMATION: The conference report accompanying Public Law 101-517, The Departments of Labor, Health and Human Services, and Education and Related Agencies Appropriations Act, 1991, states that the Department should use \$1,000,000, later reduced to \$975,987, of the appropriations for the Fund for the Improvement of Postsecondary Education (FIPSE), for a minority teacher training project.

Congress appropriated the funds for this project under the authority for FIPSE, and the competition for this project will be conducted under the FIPSE regulations in 34 CFR part 630. The minority teacher training project is the only project that will be funded under this competition.

A notice of proposed priority for the Minority Teacher Training Project was published in the *Federal Register* on May 21, 1991 (56 FR 23334). The public comment period ended on June 20, 1991. It is the policy of the Department of Education not to solicit applications before the publication of final priorities. However, in this case, it is essential to solicit applications on the basis of the notice of proposed priority to enable the Department to make an award in fiscal year 1991.

The Secretary has carefully reviewed the public comments received on the notice of proposed priority, and for the

reasons stated below, the Secretary does not expect to make any changes to the proposed priority based on those comments that would affect applications for awards.

This notice contains the priority as the Secretary expects to issue it in the notice of final priorities. Applicants should prepare their applications on the basis of this priority. If any changes are made in the final priority, applicants will be given the opportunity to revise their applications.

Comment Summary

The Secretary received eleven letters commenting on the proposed priority for funding a Minority Teacher Training Project. A summary of those comments follows:

Two commenters noted that language in the conference report accompanying Public Law 101-517 suggested that the Minority Teacher Training project be conducted by a consortium of institutions with established track records in training minority teachers. These commenters asked that such consortia be designated as the only eligible applicants under this priority. Another commenter indicated that minority students comprise a major portion of the student population at some community colleges and inasmuch as community colleges often have outreach programs, they too should be included as participants in this initiative. A few commenters expressed concerns that the proposed priority may limit the recruitment and training effort to a defined local or regional geographic area and not permit a project of national dimensions.

Two commenters recommended that funds be made available for tuition or stipends for minority students, and one of the two commenters suggested that special academic support services be provided for minority students at the undergraduate and graduate levels.

One commenter recommended amending the language of the proposed priority to provide for activities which will encourage students to consider a career in teaching without requiring them to major in education. Another commenter suggested that the Secretary add to the priority requirements for project evaluation and the same commenter proposed including the dissemination of successful strategies for minority teacher recruitment and preparation.

Other comments included suggestions to strengthen the proposed priority by adding training for student participants in multicultural awareness, including cultural commonalities; training

methods that aid and encourage learners to become responsible for their own learning; utilization of master teachers in the joint restructuring of methodology courses; and opportunities to acquire skills and experience with new technologies for the classroom.

Discussion: Eligible applicants for FIPSE awards are institutions of postsecondary education, a combination of institutions of postsecondary education, and other public and private educational institutions and agencies. The Secretary does not have the authority to restrict the list of eligible applicants further. However, the Secretary encourages applications from community colleges and consortia with experience in training minority teachers.

A broad nationally-focused project which gives consideration to the country's regional and local needs is the ultimate goal of this initiative; however, the Secretary realizes that the current availability of funds will, in part, determine the extent of impact under this project. Nothing in the current proposed priority is intended to limit recruitment or training to specific geographic areas.

Though funds under this priority may not be used for tuition or stipends, Federal and other student financial assistance for the costs of attendance at institutions of higher education is available to eligible participating students. Funds under this priority may be used to provide special academic support services to student participants when necessary for their success.

The priority does not limit participation in the teacher training program to students who are majoring in education; students pursuing other majors are also eligible to participate.

It is not necessary to add requirements for project evaluation to the priority because evaluation is required by the Education Department General Administrative Regulations (EDGAR) (34 CFR 75.590), and ability to perform evaluation is a selection criterion under the FIPSE program regulations (630.32(b)(2)(ii)). Priority: Under 34 CFR 75.105(c)(3) the Secretary expects to give absolute preference to applications that meet the following priority:

Minority Teacher Recruitment and Training Project

The Minority Teacher Recruitment and Training Project must have the following components:

(a) Activities by an institution within the consortium or institutions of higher education to identify minority students at the secondary and postsecondary levels and to encourage them to enter

teacher training programs. One of the recruitment activities shall be collaboration of the institution within the consortium or institutions of higher education providing the teacher training with participating local educational agencies (LEAs), including an in-service program for teachers in the participating LEAs.

(b) Specialized teacher training designed to meet the needs of all participating students in teacher training programs to which the minority students are recruited. The teacher training program shall include, but not be limited to, instructional and support service activities that address—

- (1) Socio-psychological concerns in learning, including learning by minority students;
- (2) Language and cultural differences among students;
- (3) Culture-sensitive instructional materials for use by participants in the teacher training;
- (4) Training in the effective use of culture-sensitive instructional materials in the classroom;
- (5) Joint restructuring of methodology courses between the liberal arts and education faculties.

Funds awarded under this priority are not available for tuition or other costs of the participating students' attendance at institutions of higher education.

For the purpose of this project, "minority" is defined as "American Indian, Alaskan Native, Asian, Black (not of Hispanic origin), Hispanic (including persons of Mexican, Puerto Rican, Cuban and Central or South American origin), or Pacific Islander."

Selection Criteria: Applications will be evaluated on the basis of the following selection criteria chosen from those listed in 34 CFR 630.32:

(a) **Significance for Postsecondary Education.** Each proposed project will be reviewed for its significance in improving postsecondary education by determining the extent to which it would—

(1) Address the program priorities for the particular program competition;

(2) Represent an improvement upon, or important departure from, existing practice;

(3) Involve learner-centered improvements;

(4) Achieve far-reaching impact through improvements that will be useful in a variety of ways in a variety of settings; and

(5) Increase the cost-effectiveness of services.

(b) **Feasibility.** Each proposed project will be reviewed for its feasibility by determining the extent to which—

(1) The proposed project represents an appropriate response to the problem or need addressed;

(2) The applicant is capable of carrying out the proposed project as evidenced by, for example—

(i) The applicant's understanding of the problem or need;

(ii) The quality of the project design, including objectives, approaches, and evaluation plan;

(iii) The adequacy of resources, including money, personnel, facilities, equipment, and supplies;

(iv) The qualifications of key personnel who would conduct the project;

(v) The applicant's relevant prior experience;

(3) The applicant and any other participating organizations are committed to the project, as evidenced by, for example—

(i) The contribution of resources by the applicant and by participating organizations;

(ii) Their prior work in the area; and

(iii) The potential for continuation of the proposed project beyond the period of funding (unless the project would be self-terminating); and

(4) The proposed project demonstrates potential for dissemination to or adaptation by other organizations, and shows evidence of interest by potential users.

(c) **Appropriations of Funding Projects.** The Secretary reviews each application to determine whether support of the proposed project by the Secretary is appropriate in terms of the availability of other funding sources for the proposed activities.

In review of applications, all criteria are equally important. Within each of these criteria equal weight will be given to each of the subcriteria. In applying the criteria, the Secretary first analyzes an application in terms of each individual criterion. The Secretary then bases final judgement on an overall assessment of the degree to which the applicant addresses all selection criteria.

FOR APPLICATIONS OR INFORMATION

CONTACT: John L. Hunt, U.S. Department of Education, 400 Maryland Avenue SW., room 3042, ROB-3, Washington, DC 20202-5336. Telephone: (202) 708-8863. Deaf and hearing impaired individuals may call the Federal Dual Party Relay Service at 1-800-877-8339 (in the Washington, DC 202 area code, telephone 708-9300) between 8 a.m. and 7 p.m., Eastern time.

Authority: 20 U.S.C. 1135-1135a-3.

Dated: July 12, 1991.

Michael J. Farrell,

Acting Assistant Secretary for Postsecondary Education.

[FR Doc. 91-17081 Filed 7-16-91; 8:45 am]

BILLING CODE 4000-01-M

DEPARTMENT OF ENERGY

Financial Assistance Award Intent To Award Grant to Act Laboratories, Inc.

AGENCY: U.S. Department of Energy.

ACTION: Notice of unsolicited application financial assistance award.

SUMMARY: The Department of Energy announces that pursuant to 10 CFR 600.6(a)(2), it is making a discretionary financial assistance award based on acceptance of an unsolicited application meeting the criteria of 10 CFR 600.14(e)(1) to Act Laboratories, Inc., under Grant Number DE-FC01-91CE15522. The proposed grant will provide funding in the estimated amount of \$79,991 for Act Laboratories, Inc., to test the effectiveness of a laboratory model of the AQUA-SHEAR technology to save energy in the thorough mixing of difficult-to-mix industrially important materials. The invention pertains to improving the efficiency and cost of difficult-to-mix fluids, gasses and solids of industrial importance. This technology minimizes frictional losses thus saving 50% of the energy required by conventional mixing technology.

The Department of Energy has determined in accordance with 10 CFR 600.14(f) that the application submitted by Act Laboratories, Inc., is meritorious based on the general evaluation required by 10 CFR 600.14(d) and that the proposed project represents a unique idea that would not be eligible for financial assistance under a recent, current or planned solicitation. The Energy-Related Inventions Program (ERIP) has been structured since its beginning in 1975 to operate without competitive solicitations because the authorizing legislation directs ERIP to provide support for worthy ideas submitted by the public. The proposed technology has a strong possibility of allowing for future reductions in the nation's energy consumption.

The anticipated term of the proposed grant is 24 months from the effective date of award.

FOR FURTHER INFORMATION CONTACT:

U.S. Department of Energy, Office of Placement and Administration, Attn: Phyllis P. Morgan, PR-322.2, 1000

Independence Avenue SW.,
Washington, DC 20585.

Thomas S. Keefe,

Director, Operations Divisions "B", Office of Placement and Administration.

[FR Doc. 91-17035 Filed 7-16-91; 8:45 am]

BILLING CODE 6450-01-M

Financial Assistance Award Intent To Award Grant to Advanced Cooling Technology (ACT), Inc.

AGENCY: U.S. Department of Energy.

ACTION: Notice of unsolicited application financial assistance award.

SUMMARY: The Department of Energy announces that pursuant to 10 CFR 600.6(a)(2), it is making a discretionary financial assistance award based on acceptance of an unsolicited application meeting the criteria of 10 CFR 600.14(e)(1) to Advanced Cooling Technology under Grant Number DE-FC01-91CE15525. The proposed grant will provide funding in the estimated amount of \$74,387 for Advanced Cooling Technology to develop an improved, more reliable and more marketable version of their evaporative subcooler add-on. The device may be retrofit onto air-cooled air-conditioning and refrigeration units thereby increasing their efficiency. The invention is a patented technique for retrofitting a compact, evaporatively-cooled subcooler, on air-cooled, air-conditioning and refrigeration units. The invention's energy saving potential would be significant for air conditioning and refrigeration systems not already equipped with a subcooler. If the refrigeration capacity remained constant, the operating time of the compressor would be reduced. Energy savings would be greater in warmer climates (because of longer hours of operation), and in air-conditioning and refrigeration systems where the components are poorly matched and sized.

The Department of Energy has determined in accordance with 10 CFR 600.14(f) that the application submitted by Advanced Cooling Technology is meritorious based on the general evaluation required by 10 CFR 600.14(d) and that the proposed project represents a unique idea that would not be eligible for financial assistance under a recent, current or planned solicitation. The Energy-Related Inventions Program (ERIP) has been structured since its beginning in 1975 to operate without competitive solicitations because the authorizing legislation directs ERIP to provide support for worthy ideas submitted by the public. The proposed technology has a strong possibility of allowing for future reductions in the nation's energy consumption.

technology has a strong possibility of adding to the national energy resources.

The anticipated term of the proposed grant is eighteen months from the effective date of award.

FOR FURTHER INFORMATION CONTACT:

U.S. Department of Energy, Office of Placement and Administration, Attn: Phyllis P. Morgan, PR-22.2 1000 Independence Avenue SW., Washington, DC 20585.

Thomas S. Keefe,

Director, Operations Division "B", Office of Placement and Administration.

[FR Doc. 91-17036 Filed 7-16-91; 8:45 am]

BILLING CODE 6450-01-M

Financial Assistance Award Intent To Award Grant to Double M. Electric

AGENCY: U.S. Department of Energy.

ACTION: Notice of unsolicited application financial assistance award.

SUMMARY: The Department of Energy announces that pursuant to 10 CFR 600.6(a)(2), it is making a discretionary financial assistance award based on acceptance of an unsolicited application meeting the criteria of 10 CFR 600.14(e)(1) to Double M. Electric under Grant Number DE-FC01-91CE15510. The proposed grant will provide funding in the estimated amount of \$90,120 for Double M. Electric to save energy in the operation of an oil well beam pump using its ability to anticipate abnormal conditions in the performance of the well and pumping system by monitoring and controlling power consumption in real time. The invention pertains to improving and adding additional functions to oil well processors that are not patented, in commercial use, and a simplified version of the system has been tested and marketed.

The Department of Energy has determined in accordance with 10 CFR 600.14(f) that the application submitted by Double M. Electric is meritorious based on the general evaluation required by 10 CFR 600.14(d) and that the proposed project represents a unique idea that would not be eligible for financial assistance under a recent, current or planned solicitation. The Energy-Related Inventions Program (ERIP) has been structured since its beginning in 1975 to operate without competitive solicitations because the authorizing legislation directs ERIP to provide support for worthy ideas submitted by the public. The proposed technology has a strong possibility of allowing for future reductions in the nation's energy consumption.

The anticipated term of the proposed grant is eighteen months from the effective date of award.

FOR FURTHER INFORMATION CONTACT:
U.S. Department of Energy, Office of Placement and Administration, ATTN: Phyllis P. Morgan, PR-322.2, 1000 Independence Avenue, SW., Washington, DC 20585.

Thomas S. Keefe,
Director, Operations Division "B", Office of Placement and Administration.

[FR Doc. 91-17037 Filed 7-16-91; 8:45 am]

BILLING CODE 6450-01-M

Financial Assistance Award Intent To Award Grant to Servo-Dynamics, Inc.

AGENCY: U.S. Department of Energy.

ACTION: Notice of unsolicited application financial assistance award.

SUMMARY: The Department of Energy announces that pursuant to 10 CFR 600.6(a)(2), it is making a discretionary financial assistance award based on acceptance of an unsolicited application meeting the criteria of 10 CFR 600.14(e)(1) to Servo-Dynamics, Inc., under Grant Number DE-FG01-91CE15517. The proposed grant will provide funding in the estimated amount of \$88,335 for Servo-Dynamics, Inc., to increase the production from oil and gas wells, by improving a fracturing process which should limit failure from existing fracturing methods that inherently introduce inefficiencies and failures that can lead to well abandonment. The invention pertains to instrumenting a process that is now in commercial use, for which two patents have been issued, and for which an instrumentation prototype is available for adaptation to the basic unit. If further developed this invention will improve the yield in enhanced oil recovery.

The Department of Energy has determined in accordance with 10 CFR 600.14(f) that the application submitted by Servo-Dynamics, Inc., is meritorious based on the general evaluation required by 10 CFR 600.14(d) and that the proposed project represents a unique

idea that would not be eligible for financial assistance under a recent, current or planned solicitation. The Energy-Related Inventions Program (ERIP) has been structured since its beginning in 1975 to operate without competitive solicitations because the authorizing legislation directs ERIP to provide support for worthy ideas submitted by the public. The proposed technology has a strong possibility of adding to the national energy resources.

The anticipated term of the proposed grant is eighteen months from the effective date of award.

FOR FURTHER INFORMATION CONTACT:
U.S. Department of Energy, Office of Placement and Administration, ATTN: Phyllis P. Morgan, PR-322.2, 1000 Independence Avenue SW., Washington, DC 20585.

Thomas S. Keefe, Director,
Operations Division "B", Office of Placement and Administration.

[FR Doc. 91-17038 Filed 7-16-91; 8:45 am]

BILLING CODE 6450-01-M

Federal Energy Regulatory Commission

[Docket Nos. CI91-98-000, et al.]

Southern California Gas Co., et al.; Natural Gas Certificate Filings

Take notice that the following filings have been made with the Commission:

1. Southern California Gas Company

[Docket No. CI91-98-000]

July 5, 1991.

Take notice that on June 24, 1991, Southern California Gas Company (SoCalGas), a local distribution company, of P.O. Box 3249, Terminal Annex, Los Angeles, California 90051, filed an application pursuant to sections 4 and 7 of the Natural Gas Act and the Federal Energy Regulatory Commission's (Commission) regulations thereunder for an unlimited-term blanket certificate with pregranted abandonment authorizing sales for resale in interstate commerce of all

NGPA categories of natural gas which when sold by SoCalGas are subject to the Commission's NGA jurisdiction. SoCalGas also requests that the Commission's NGA state that the validity of SoCalGas' exclusion under section 1(c) of the NGA is not impaired by activity conducted under the authorization requested, all as more fully set forth in the application which is on file with the Commission and open for public inspection.

Comment date: July 25, 1991, in accordance with Standard Paragraph J at the end of the notice.

2. Panhandle Eastern Pipe Line Company

[Docket Nos. CP91-2386-000, CP91-2387-000]

July 5, 1991.

Take notice that on July 2, 1991, Panhandle Eastern Pipe Line Company (Panhandle), P.O. Box 1642, Houston, Texas 77251-1642, filed in the above-referenced dockets prior notice requests pursuant to §§ 157.205 and 284.223 of the Commission's Regulations under the Natural Gas Act for authorization to transport natural gas on behalf of shippers under its blanket certificate issued in Docket No. CP86-585-000, pursuant to section 7 of the Natural Gas Act, all as more fully set forth in the requests that are on file with the Commission and open to public inspection.¹

Information applicable to each transaction, including the identity of the shipper, the type of transportation service, the appropriate transportation rate schedule, the peak day, average day and annual volumes, and the initiation service dates and related ST docket numbers of the 120-day transactions under § 284.223 of the Commission's Regulations, has been provided by Panhandle and is summarized in the attached appendix.

Comment date: August 19, 1991, in accordance with Standard Paragraph G at the end of this notice.

¹ These prior notice requests are not consolidated.

Docket No. (date filed)	Shipper name (type)	Peak day, average day, annual Dth	Receipt points	Delivery points	Contract date, rate schedule, service type	Related docket, start up date
CP91-2386-000 (7-2-91)	Gastrak Corporation (Marketer).	62,500 62,500 22,812,500	CO, IL, KN, MI, OH, OK, TX, WY	Various.....	6-16-88 PT, Interruptible.	ST91-8769-000, 5-1-91.
CP91-2387-000 (7-2-91)	Amgas, Inc. (Marketer).....	40 40 7,300	CO, IL, KN, MI, OH, OK, TX, WY	IL.....	4-4-91 PT, Interruptible.	ST91-8775-000, 5-1-91.

3. Panhandle Eastern Pipe Line Company

[Docket Nos. CP91-2388-000, CP91-2389-000, CP91-2390-000, CP91-2391-000]

July 5, 1991.

Take notice that Panhandle Eastern Pipe Line Company, P.O. Box 1642, Houston, Texas 77251-1642, (Applicant) filed in the above-referenced dockets prior notice requests pursuant to §§ 157.205 and 284.223 of the Commission's Regulations under the

Natural Gas Act for authorization to transport natural gas on behalf of shippers under this blanket certificate issued in Docket No. CP86-585-000, pursuant to section 7 of the Natural Gas Act, all as more fully set forth in the requests that are on file with the Commission and open to public inspection.²

Information applicable to each transaction, including the identity of the shipper, the type of transportation

service, the appropriate transportation rate schedule, the peak day, average day and annual volumes, and the initiation service dates and related ST docket numbers of the 120-day transactions under § 284.223 of the Commission's Regulations, has been provided by applicant and is summarized in the attached appendix.

Comment date: August 19, 1991, in accordance with Standard Paragraph G at the end of this notice.

Docket No. (date filed)	Shipper name (type)	Peak day, average day, annual dt	Receipt points	Delivery points	Contract date, rate schedule service type	Related docket, start up date
CP91-2388-000 (7-2-91)	Unifield Natural Gas Group (Marketer).	30,000 30,000 10,950,000	CO, KS, TX, OK, MI, IL, OH.....	OH.....	11-21-89, PT, Interruptible.	ST91-8774, 5-1-91
CP91-2389-000 (7-2-91)	Enron Gas Marketing, Inc. (Marketer).	100,000 100,000 36,500,000	CO, KS, TX, OK, MI, IL, OH.....	TX.....	4-24-91, PT, Interruptible.	ST91-8780, 5-1-91
CP91-2390-000 (7-2-91)	Access Energy Corporation (Marketer).	50,000 50,000 18,250,000	CO, KS, TX, OK, WY, MI, IL, OH.....	Various.....	6-1-89, PT, Interruptible.	ST91-8878, 5-1-91
CP 91-2391-000 (7-2-91)	Cibola Corporation (Marketer).	100,000 100,000 36,500,000	CO, KS, TX, OK, IL.....	Kansas.....	10-24-89, PT, Interruptible.	ST91-8879, 5-1-91

4. Panhandle Eastern Pipe Line

[Docket Nos. CP91-2379-000, CP91-2380-000, CP91-2381-000, CP91-2382-000, CP91-2383-000]

July 5, 1991.

Take notice that the above referenced companies (Applicants) filed in respective dockets prior notice requests pursuant to §§ 157.205 and 284.223 of the Commission's Regulations under the Natural Gas Act for authorization to transport natural gas on behalf of various shippers under blanket

certificates issued pursuant to section 7 of the Natural Gas Act, all as more fully set forth in the prior notice requests which are on file with the Commission and open to public inspection.³

Information applicable to each transaction including the identity of the shipper, the type of transportation service, the appropriate transportation rate schedule, the peak day, average day, and annual volumes, and the docket numbers and initiation dates of the 120-day transactions under § 284.223

of the Commission's Regulations has been provided by the Applicants and is included in the attached appendix.

The Applicants also state that each would provide the service for each shipper under an executed transportation agreement, and that the Applicants would charge rates and abide by the terms and conditions of the reference transportation rate schedules.

Comment date: August 19, 1991, in accordance with Standard Paragraph G at the end of this notice.

Docket No. (date filed)	Applicant	Shipper Name	Peak day ¹ , average, annual	Points of		Start up date rate schedule	Related ² dockets
				Receipt	Delivery		
CP91-2379-000 7/2/91	Panhandle Eastern Pipe Line Company, P.O. Box 1642, Houston, TX 77251-1642.	Panhandle Trading Company.	100,000 100,100 36,500,000	CO, KS, IL, MI, OH, OK, TX, WY.	MI.....	PT Interruptible 5/1/91.	CP86-585-000 ST91-8775-000
CP91-2380-000 7/2/91	Panhandle Eastern Pipe Line Company, P.O. Box 1642, Houston, TX 77251-1642.	Hudson Gas Systems, Inc.	100,000 100,000 36,500,000	CO, KS, IL, MI, OH, OK, TX.	MO.....	PT Interruptible 5/3/91.	CP86-585-000 ST91-8773-000
CP91-2381-000 7/2/91	Panhandle Eastern Pipe Line Company, P.O. Box 1642, Houston, TX 77251-1642.	Panhandle Trading Company.	100,000 100,000 36,500,000	CO, KS, IL, MI, OH, OK, TX, WY.	Various.....	PT Interruptible 5/1/91.	CP86-585-000 ST91-8772-000

¹ These prior notice requests are not consolidated.

² These prior notice requests are not consolidated.

Docket No. (date filed)	Applicant	Shipper Name	Peak day ¹ average, annual	Points of		Start up date rate schedule	Related ² dockets
				Receipt	Delivery		
CP91-2382-000 7/2/91	Panhandle Eastern Pipe Line Company, P.O. Box 1642, Houston, TX 77251-1642.	Texpar Energy, Inc. Company.	100,000 100,000 36,500,000	CO, KS, IL, MI, OH, OK, TX.	KS.....	PT Interruptible 5/1/91.	CP86-585-000 ST91-8779-000
CP91-2383-000 7/2/91	Panhandle Eastern Pipe Line Company, P.O. Box 1642, Houston, TX 77251-1642.	Midwest Grain Products of Illinois.	2,900 2,900 1,058,500	CO, KS, IL, MI, OH, OK, TX, WY.	IL.....	PT Interruptible 5/1/91.	CP86-585-000 ST91-8776-000

¹ Quantities are shown in Dt. unless otherwise indicated.

² The CP docket corresponds to applicant's blanket transportation certificate. If an ST docket is shown, 120-day transportation service was reported in it.

5. Lockport Energy Associates, L.P.

[Docket No. CI91-93-000]

July 5, 1991.

Take notice that on June 13, 1991, Lockport Energy Associates, L.P. (Lockport), c/o CU Energy Lockport GP, Inc., 115 East 57th Street, New York, New York 10022, filed an application pursuant to section 7 of the Natural Gas Act and the Federal Energy Regulatory Commission's (Commission) regulations thereunder for an unlimited-term blanket certificate with pregranted abandonment authorizing sales for resale in interstate commerce of natural gas subject to the Commission's jurisdiction, including imported natural gas, all as more fully set forth in the application which is on file with the Commission and open for public inspection.

Comment date: July 25, 1991, in accordance with Standard Paragraph J at the end of this notice.

6. New York State Electric & Gas Corporation

[Docket No. CI91-94-000]

July 5, 1991.

Take notice that on June 4, 1991, New York State Electric & Gas Corporation (NYSEG), a local distribution company, of P.O. Box 287, Ithaca, New York 14851, filed an application pursuant to section 7 of the Natural Gas Act and the Federal Energy Regulatory Commission's (Commission) regulations thereunder for an unlimited-term blanket certificate with pregranted abandonment authorizing sales for resale in interstate commerce of all categories of natural gas that when sold by an LDC are subject to the Commission's NGA jurisdiction, including all categories of NGPA gas subject to the Commission's

NGA jurisdiction, gas purchased under any existing or subsequently approved pipeline blanket certificates authorizing interruptible sales of surplus system supply, imported gas, and gas purchased from local distribution companies. NYSEG also requests that the Commission state that the validity of NYSEG's exclusion under section 1(c) of the NGA is not impaired by activity conducted under the authorization requested, all as more fully set forth in the application which is on file with the Commission and open for public inspection.

Comment date: July 25, 1991, in accordance with Standard Paragraph J at the end of this notice.

7. Niagara Mohawk Power Corporation

[Docket No. CI91-97-000]

July 5, 1991.

Take notice that on June 21, 1991, Niagara Mohawk Power Corporation (Niagara Mohawk), a local distribution company, of 300 Erie Boulevard West, Syracuse, New York 13202, filed an application pursuant to section 7 of the Natural Gas Act and the Federal Energy Regulatory Commission's (Commission) regulations thereunder for an unlimited-term blanket certificate with pregranted abandonment authorizing sales for resale in interstate commerce of any NGPA categories of natural gas subject to the Commission's NGA jurisdiction, any imported gas, including liquefied natural gas, any gas purchased from pipelines under existing or subsequently approved pipeline blanket certificate authority approving the interruptible sales of surplus system supply gas, and any gas purchased from non-first sellers, including intrastate pipelines and other local distribution companies. Niagara Mohawk also requests that the

Commission state that the validity of Niagara Mohawk's exclusion under section 1(c) of the NGA is not impaired by activity conducted under the authorization requested, all as more fully set forth in the application which is on file with the Commission and open for public inspection.

Comment date: July 25, 1991, in accordance with Standard Paragraph J at the end of this notice.

8. Florida Gas Transmission Company

[Docket Nos. CP91-2363-000, CP91-2364-000]

July 5, 1991.

Take notice that Florida Gas Transmission Company, 1400 Smith Street, P.O. Box 1188, Houston, Texas 77251-1188, (Applicant) filed in the above-referenced dockets prior notice requests pursuant to §§ 157.205 and 284.223 of the Commission's Regulations under the Natural Gas Act for authorization to transport natural gas on behalf of shippers under its blanket certificate issued in Docket No. CP89-555-000, pursuant to section 7 of the Natural Gas Act, all as more fully set forth in the requests that are on file with the Commission and open to public inspection.⁴

Information applicable to each transaction, including the identity of the shipper, the type of transportation service, the appropriate transportation rate schedule, the peak day, average day and annual volumes, and the initiation service dates and related ST docket numbers of the 120-day transactions under § 284.223 of the Commission's Regulations, has been provided by the Applicant and is summarized in the attached appendix.

Comment date: August 19, 1991, in accordance with Standard Paragraph G at the end of this notice.

* These prior notice requests are not consolidated.

Docket No. (date filed)	Shipper name (type)	Peak day, average day, annual MMBtu	Receipt points	Delivery points	Contract date, rate schedule, service type	Related docket, start up date
CP91-2363-000 (7-1-91)	Amoco Energy Trading Corporation (shipper).	100,000 75,000 36,500,000 25,000 18,750 9,125,000	Multiple	TX, LA.....	5-23-91, ITS-1, Interruptible.	ST91-9135 6-1-91
CP91-2364-000 (7-1-91)	Shell Offshore, Inc. (shipper).		Multiple	LA.....	5-24-91, ITS-1, Interruptible.	ST91-9134 6-1-91

9. Natural Gas Pipeline Company of America

[Docket No. CP91-2357-000]

July 5, 1991.

Take notice that on June 28, 1991, Natural Gas Pipeline Company of America (Natural), 701 East 22nd Street, Lombard, Illinois 60148, filed in Docket No. CP91-2357-000, an application pursuant to section 7(b) of the Natural Gas Act for permission and approval to abandon, effective December 31, 1991, a firm transportation service provided by Natural for Southern Natural Gas Company (Southern), all as more fully set forth in the application which is on file with the Commission and open to public inspection.

Natural states that it is providing a firm transportation service of up to 90,000 MMBtu of natural gas per day for Southern pursuant to the certificate authorization granted in Docket No. CP82-50-000, as amended, and a gas transportation agreement between Natural and Southern dated October 20, 1981, as amended, on file with the Commission as Natural's Rate Schedule

X-128. Natural states that it receives up to 90,000 MMBtu of natural gas per day for the account of Southern in Beckham, Caddo, Washita, Custer, Grady and Dewey Counties, Oklahoma and redeliver such gas to Southern in Cameron and Vermillion Parishes, Louisiana and in Custer County, Oklahoma.

Natural further states that pursuant to a Termination Agreement dated June 30, 1991, Natural and Southern have agreed to terminate the transportation service effective December 31, 1991.

Natural is not proposing the abandonment of any facilities herein.

Comment date: July 26, 1991, in accordance with Standard Paragraph F at the end of this notice.

10. Columbia Gas Transmission Corporation

[Docket Nos. CP91-2359-000, CP91-2360-000, CP91-2361-000, CP91-2362-000]

July 5, 1991.

Take notice that Columbia Gas Transmission Corporation, 1700 MacCorkle Avenue, S.E., Charleston,

West Virginia 25314, (Applicant) filed in the above-referenced dockets prior notice requests pursuant to §§ 157.205 and 284.223 of the Commission's Regulations under the Natural Gas Act for authorization to transport natural gas on behalf of shippers under its blanket certificate issued in Docket No. CP86-240-000, pursuant to section 7 of the Natural Gas Act, all as more fully set forth in the requests that are on file with the Commission and open to public inspection.⁵

Information applicable to each transaction, including the identify of the shipper, the type of transportation service, the appropriate transportation rate schedule, the peak day, average day and annual volumes, and the initiation service dates and related ST docket numbers of the 120-day transactions under § 284.223 of the Commission's Regulations, has been provided by Applicant and is summarized in the attached appendix.

Comment date: August 19, 1991, in accordance with Standard Paragraph G at the end of this notice.

Docket No. (date filed)	Shipper name (type)	Peak day, average day, annual MMBtu	Receipt ¹ points	Delivery points	Contract date, rate schedule, service type	Related docket, start up date
CP91-2359-000 (6-28-91)	Access Energy Pipeline Corporation (marketeer).	25,000 20,000 9,125,000	OH, MD, PA, NY, VA, KY, WV.	OH, MD, PA, NY, VA, KY, WV.	4-24-91, ITS, Interruptible.	ST91-8707 5-10-91
CP91-2360-000 (6-28-91)	Kogas, Inc. (marketeer).....	300,000 240,000 109,500,000	OH, MD, PA, NY, VA, KY, WV, NJ.	OH, MD, PA, NY, VA, KY, WV.	4-24-91, ITS, Interruptible.	ST91-8818 5-2-91
CP91-2361-000 (6-28-91)	Ashland Exploration, Inc. (producer).	30,000 24,000 10,950,000	OH, MD, PA, NY, VA, KY, WV.	PA	10-15-90, ITS, Interruptible.	ST91-8675 5-1-91
CP91-2362-000 (6-28-91)	GTE Products Corporation (end-user).	1,650 1,320 602,250	KY	KY	5-1-91, FTS, Firm....	ST91-8724 5-8-91

¹ Offshore Louisiana and offshore Texas are shown as OLA and OTX.

11. Natural Gas Pipeline Company of America

[Docket No. CP91-2395-000]

July 8, 1991.

Take notice that on July 3, 1991, Natural Gas Pipeline Company of

America (Natural), 701 East 22nd Street, Lombard, Illinois 60148, filed a request with the Commission in Docket No. CP91-2395-000 to § 157.205 of the commission's regulations under the Natural Gas Act (NGA) for

authorization to provide a firm transportation service for Grain Processing Corporation (Grain), an end-user, under the blanket certificate issued in Docket No. CP86-582-000 pursuant to section 7 of the NGA, all as more fully

⁵ These prior notice requests are not consolidated.

set forth in the request which is open to public inspection.

Natural states that pursuant to an August 6, 1990, agreement, amended May 1, 1991, it proposes to transport under its Rate Schedule FTS up to 4,000 MMBtu of natural gas on peak and average days and 1,460,000 MMBtu annually. Natural indicates that it would receive the gas for Grain's account in Iowa, Kansas, Nebraska, Oklahoma, and Texas, then deliver the gas in Illinois and Iowa. Natural advises that service under § 284.223(a) commenced May 1, 1991, as reported in Docket No. ST91-9403.

Comment date: August 22, 1991, in accordance with Standard paragraph G at the end of this notice.

12. Williams Gas Processing Company

[Docket No. CP91-2393-000]

July 8, 1991.

Take notice that on July 2, 1991, Williams Gas Processing Company (Applicant), 295 Chipeta Way, P.O. Box 58900, Salt Lake City, Utah 84158-0900, filed a petition in Docket No. CP91-2393-000 for an order declaring that Applicant's acquisition, ownership and operation of the natural gas gathering systems currently owned by Northwest Pipeline Corporation (Northwest) will not subject Applicant or any portion of Applicant's facilities or services to the jurisdiction of the commission under the Natural Gas Act, all as more fully set forth in the petition which is on file with the Commission and open to public inspection.

Applicant states that Northwest is concurrently seeking in a separate proceeding authority to abandon jurisdictional gathering facilities comprising a portion of the facilities to be conveyed to Applicant by Northwest. Applicant states that upon approval by the Commission of Northwest's application for abandonment, it would acquire all of Northwest's gathering systems, including processing facilities. It is indicated that Applicant is organized as a separate stand-alone company, independent of the interstate transmission business of Northwest. It is also indicated that Applicant would, in competition with others, focus its business efforts on the gathering and processing of natural gas and would not engage in the purchase or sale of natural gas or in the transportation of natural gas in interstate commerce. Applicant states that it would provide, in a non-discriminatory manner, competitive gathering and processing services, consistent with open-access principles.

Applicant avers that the requested disclaimer is warranted because (1) the

subject facilities perform the exempt function of gathering under the commission's "primary function" test, (2) the services to be provided by Applicant do not require Commission regulation in connection with Northwest's interstate transmission business and (3) in the competitive production area environment created by Congressional policies, it should be permitted to compete on an equal footing with others providing the same services without the constraints imposed by the Commission's Regulations.

Applicant also argues that the requested disclaimer of jurisdiction lies at the heart of our national competitive wellhead policy. Applicant indicates that Congressional and Commission actions encouraging competition in production areas and ensuring open-access transportation on interstate pipelines, together with Northwest's aggressive implementation of these policies, including the virtual extinction of its merchant function, has created the desired result of a competitive wellhead market. Applicant states that the achievement of these objectives has placed Northwest's regulated gathering and processing services at a competitive disadvantage. Applicant concludes that its gathering and processing should be separated from its transmission business.

Comment date: July 29, 1991, in accordance with the first subparagraph of Standard Paragraph F at the end of this notice.

13. Southern Natural Gas Company

[Docket No. CP89-1232-001]

July 8, 1991.

Take notice that on July 2, 1991, Southern Natural Gas Company (Southern), Post Office Box 2563, Birmingham, Alabama 35202-2563, filed a petition in Docket No. CP89-1232-001 for modification of an order issued May 18, 1990, which reflected a facility cost less than the costs actually incurred and for waiver of its lateral line policy set forth in its tariff, all as more fully set forth in the petition which is on file with the Commission and open to public inspection.

Southern states that it received authorization by order issued May 18, 1990, in Docket No. CP89-1232-000 to construct and operate a meter station and appurtenant facilities to serve the City of Cartersville, Georgia (Cartersville). It is indicated that the order recognized that Cartersville would be responsible for all costs associated with the construction of the meter station. Southern then stated that

Southern completed construction of the facilities and placed them into service on August 28, 1990. It was then indicated that in the six-month cost report submitted on February 27, 1991, pursuant to § 157.20(c)(4) of the Commission's Regulations, Southern reflected construction costs for the facilities of \$333,551, rather than the originally estimated costs of \$215,000.

Southern states that it explained in its cost report that the main reason for the increase was the additional charges incurred for labor, interest and overhead caused by the time delay which Southern did not anticipate when it made the initial estimate in January 1989. Southern states that Cartersville has represented that it has obtained approval from its City Council for the reimbursement of only \$215,000 to Southern. Southern states that, since the final cost of the facilities resulted in a 55 percent increase over the estimate upon which Cartersville relied to plan its expansion, it believes that it is appropriate for it to share some of the overrun expenses.

Southern requests that the May 18, 1990, order be modified so that it can be authorized to absorb the costs in excess of the originally estimated \$215,000. In addition, Southern requests waiver of the lateral line policy set forth in its tariff, a request which Southern states is permitted by the terms of Section 16.5 of the General Terms and Conditions of its FERC Gas Tariff, Sixth Revised Volume No. 1.

Comment date: July 29, 1991, in accordance with the first subparagraph of Standard Paragraph F at the end of this notice.

Standard Paragraphs

F. Any person desiring to be heard or make any protest with reference to said filing should on or before the comment date file with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE, Washington, DC 20426, a motion to intervene or a protest in accordance with the requirements of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214) and the Regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a motion to intervene in accordance with the Commission's Rules.

Take further notice that, pursuant to the authority contained in and subject to jurisdiction conferred upon the Federal Energy Regulatory Commission by sections 7 and 15 of the Natural Gas Act and the Commission's Rules of Practice and Procedure, a hearing will be held without further notice before the Commission or its designee on this filing if no motion to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a motion for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for the applicant to appear or be represented at the hearing.

G. Any person or the Commission's staff may, within 45 days after the issuance of the instant notice by the Commission, file pursuant to rule 214 of the Commission's Procedural Rules (18 CFR 385.214) a motion to intervene or notice of intervention and pursuant to § 157.205 of the Regulations under the Natural Gas Act (18 CFR 157.205) a protest to the request. If no protest is filed within the time allowed therefore, the proposed activity shall be deemed to be authorized effective the day after the time allowed for filing a protest. If a protest is filed and not withdrawn within 30 days after the time allowed for filing a protest, the instant request shall be treated as an application for authorization pursuant to section 7 of the Natural Gas Act.

Standard Paragraph

J. Any person desiring to be heard or make any protest with reference to said filings should on or before the comment date file with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426 a motion to intervene or a protest in accordance with the requirements of the Commission's Rules of Practice and Procedure (18 CFR 385.211, .214). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party in any proceeding herein must file a petition to intervene in accordance with the Commission's rules.

Under the procedure herein provided for, unless otherwise advised, it will be

unnecessary for the applicant to appear or be represented at the hearing.

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16955 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP88-211-015]

CNG Transmission Corp.; Proposed Changes in FERC Gas Tariff

July 10, 1991.

Take notice that on July 5, 1991, CNG Transmission Corporation (CNG) tendered for filing the following revised tariff sheet to Volume No. 1 of its FERC Gas Tariff with a proposed effective date of July 1, 1991:

Substitute Original Sheet No. 288

CNG states that the purpose of this filing is to correct an error contained on the second line of the text of Original Sheet No. 288 filed on June 14, 1991.

CNG states that copies of the filing were served upon parties to the proceeding, CNG's customers, and interested state commissions.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16959 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP91-192-000]

ANR Pipeline Co.; Proposed Changes in FERC Gas Tariff

July 10, 1991.

Take notice that ANR Pipeline Company (ANR), on July 5, 1991 tendered for filing as part of its Original Volume Nos. 1, 1-A, 2 and 3 of its FERC Gas Tariff, six copies of tariff sheets listed on appendix A attached to the filing.

ANR states that the referenced tariff sheets are being submitted pursuant to § 2.104 of the Commission's Regulations

to implement partial recovery of approximately \$49.0 million of additional buyout buydown costs, part by a fixed monthly charge applicable to ANR's sales customers and part by a volumetric buyout buydown surcharge of \$0.0066 per dth applicable to all throughput. ANR states that in particular, this filing is being made pursuant to Article II of the Stipulation and Agreement filed by ANR on February 12, 1991 in Docket Nos. RP91-33-000 and RP91-35-000, as approved by the Commission on March 1, 1991. ANR has requested that the Commission accept the tendered tariff sheets to become effective August 5, 1991. ANR states that it intends to commence billing of the proposed fixed monthly charges and volumetric surcharge in October 1991 for September 1991 business.

ANR states that copies of this filing were served upon all of its Volume Nos. 1, 1-A, 2 and 3 customers and interested state commissions.

Any person desiring to be heard or to protest said filing should file a motion to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rules 214 and 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.214 and 385.211). All such motions or protests should be filed on or before July 16, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a motion to intervene. Copies of this filing are on file with the Commission and are available for public inspection in the public reference room.

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16965 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP91-153-001]

East Tennessee Natural Gas Co.; Notice of Compliance Filing

July 10, 1991.

Take notice that on July 5, 1991, East Tennessee Natural Gas Company (East Tennessee) submitted for filing Second Revised Sheet Nos. 20 and 40 to Original Volume No. 1A of its FERC Gas Tariff to be effective July 1, 1991.

East Tennessee states that the purpose of the filing is to expand the applicability of the subject tariff sheets to include a reference to service under

subpart B of part 284 of the Commission's regulations, in compliance with Ordering Paragraph (B) of the Commission's order issued June 20, 1991.

East Tennessee states that in compliance with Ordering Paragraph (C) of the Commission's order it is also filing workpapers showing the derivation of the rates reflected on Sheet Nos. 6 and 7.

East Tennessee notes that copies of the filing has been mailed to all affected customers and state regulatory commissions.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with Rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16963 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. TQ91-3-5-000]

Midwestern Gas Transmission Co.; Notice of Compliance Filing

July 10, 1991.

Take notice that on July 5, 1991, Midwestern Gas Transmission Company (Midwestern) filed corrected Schedule Q1, along with a Schedule G2 for processing purposes, to rectify an error in its My 31, 1991 filing in Docket No. TQ91-3-5-000. Midwestern states that the filing is being made in compliance with the Commission's July 21, 1991 letter order in the referenced docket.

Midwestern states that copies of the filing has been mailed to all customers and affected state regulatory commissions.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with Rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests

will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16964 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP89-205-002]

Point Arguello Natural Gas Line Co.; Compliance Filing

July 10, 1991.

Take notice that on June 12, 1991, Point Arguello Natural Gas Line company (PANCL) tendered for filing four substitute tariff sheets, including Rate schedules FT and IT which were filed on July 17, and July 26, 1989, in compliance with Order Nos. 509 and 509-A.

PANCL states that the substitute tariff sheets correct inadvertent omissions and small errors which were discussed during a telephone technical conference held on June 7, 1991, in the above-referenced proceeding.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rule 211 of the Commission's Rules of Practice and Procedure 18 CFR 385.211. All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceedings. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16966 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP91-167-001]

Tennessee Gas Pipeline Co.; Compliance Filing

July 10, 1991.

Take notice that on July 8, 1991, Tennessee Gas Pipeline Company (Tennessee) filed Fifth Revised Sheet Nos. 20 and 21 to Third Revised Volume No. 1 of its FERC Gas Tariff to be effective July 1, 1991. Tennessee states that the purpose of the filing is to correct pagination errors pursuant to the Commission's order on June 28, 1991.

Tennessee states that copies of the filing have been mailed to all parties on the Docket No. RP91-167 service list, and all of its customers and affected state regulatory commissions.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance

*Lois D. Cashell,
Secretary.*

[FR Doc. 91-16957 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

with rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

Lois D. Cashell,

Secretary.

[FR Doc. 91-18958 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP87-86-019]

K N Energy, Inc.; Proposed Changes in FERC Gas Tariff

July 10, 1991.

Take notice that on July 5, 1991, K N Energy, Inc. (K N) tendered for filing the following revised tariff sheets to its FERC Gas Tariff, First Revised Volume No. 1-A, with a proposed effective date of April 1, 1991:

Substitute Second Revised Sheet No. 15
Substitute Second Revised Sheet No. 17
Second Revised Sheet No. 21
Substitute Second Revised Sheet No. 50
Substitute Second Revised Sheet No. 52
Substitute Second Revised Sheet No. 56

K N states that these tariff sheets are replacements for certain tariff sheets included in K N's filing of May 30, 1991, that it made to correct errors in earlier filings.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

Lois D. Cashell,

Secretary.

[FR Doc. 91-16960 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP91-147-002]

Transcontinental Gas Pipe Line Corp.; Report of Refunds

July 10, 1991.

Take notice that Transcontinental Gas Pipe Line Corporation (Transco) on June 28, 1991, tendered for filing with the Federal Energy Regulatory Commission its Report of Refunds, made pursuant to Ordering Paragraph (C) of the Commission's May 31, 1991, order issued in Docket No RP91-147-000. Transco states that the report summarizes refund amounts made to Corning Natural Gas Corporation (Corning) via CNG Transmission Corporation for all Producer Settlement Payment (PSP) charges and Litigant Producer Settlement Payment (LPSP) charges collected from Corning over the period May 1, 1988, through April 30, 1991.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to the proceeding need not file a motion to intervene in this matter. Copies of these filings are on file with the Commission and are available for public inspection.

Lois D. Cashell,

Secretary.

[FR Doc. 91-18961 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. ES91-42-000]

Texas-New Mexico Power Co.; Amended Notice of Application

July 10, 1991.

Take notice that on June 28, 1991, Texas-New Mexico Power Company filed an application with the Federal Energy Regulatory Commission pursuant to § 204 of the Federal Power Act seeking authorization to issue not more than \$150 million of Debentures via negotiated placement.

Any person desiring to be heard or to protest said filing should file a motion to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426 in accordance with rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). All such motions or

protests should be filed on or before July 18, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party must file a motion to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

Lois D. Cashell,

Secretary.

[FR Doc. 91-18962 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. GP91-9-000]

Vernon E. Faulconer, Inc.; Petition for Waiver

July 10, 1991.

Take notice that on June 17, 1991, Vernon E. Faulconer, Inc. (Faulconer) filed with the Federal Energy Regulatory Commission (Commission) a petition for waiver, requesting the Commission to waive any regulations currently in effect requiring Faulconer to refund overpayments and interest made to Faulconer's predecessors in title to a gas well.

Faulconer states that he owns and operates the H.E. Wilcox No. 1 well producing in San Salvador Field, Hidalgo County, Texas, having acquired the well and several other wells in an assignment from Forsayth Oil and Gas, N.L. (Forsayth) on May 1, 1986. According to Faulconer, the well was drilled and completed in 1953 by Magnolia Petroleum Company and was dedicated to a gas purchase contract with Tennessee Gas Transmission Company (Tennessee) dated April 1, 1952, which expired on December 31, 1983.

Between 1978 and 1981, the well was owned and operated by Shar-Alan Oil Company. Shar-Alan filed for and obtained a section 108 well category determination from the Texas Railroad Commission (Texas) and began collecting stripper well prices in July 1979. In 1981, Shar-Alan sold the well to Forsayth who continued to collect stripper well prices through November 1984 when the well was shut in. The well was still shut in when Faulconer received the assignment from Forsayth in May 1986. All proceeds from the sale of production prior to the effective date of the May 1, 1986 assignment were paid to those who owned the well prior to that date and not to Faulconer.

After obtaining the well, Faulconer performed workover operations and restored the well to production. Spot

market sales were begun, and the well has continued producing to the current date. Sometime after obtaining the well, Faulconer learned that the Commission had issued an order on April 13, 1988 (43 FERC 61,051) in Docket No. GP87-71-000, reversing the Railroad Commission's section 108 determination for the well. Faulconer has received calculations, furnished by Tennessee which reflect total overcharges of \$22,970.90 (for the period from July 1979 through December 1984) plus interest in the amount of \$43,971.20 through January 31, 1991. With additional interest at 10% from January 31, 1991, the total amount, as of May 31, 1991, would be \$69,170.22.

Faulconer states that it never received any of the alleged overcharges which were all made for gas produced before Faulconer acquired the well. Faulconer contends that it was unaware of any problems with the section 108 classification for this well when it was acquired. According to Faulconer's best information and belief, Forsayth, an Australian corporation, is now defunct. Faulconer states that it has attempted to contact a company named Forsayth N.L., a Western Australian corporation, in the hopes that it might have been a parent company or an otherwise related company to Forsayth. These efforts have been unsuccessful. Finally, Faulconer states that it is unlikely that Faulconer has any way of recouping funds it might have to pay in this matter. Accordingly, Faulconer concludes that having received no part of any overcharges for gas sold from the Wilcox No. 1 well, it should not be required to refund the overcharges and to pay accrued interest on such overcharges.

Any person desiring to be heard or protest this petition should file a motion to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with Rules 214 and 211 of the Commission's Rules of Practice and Procedure. All such motions or protests should be filed on or before July 31, 1991. All protests filed will be considered, but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene in accordance with the Commission's rules. Copies of this petition are on file with the Commission and are available for public inspection.

Lois D. Cashell,
Secretary.

[FR Doc. 91-16956 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP89-179-010]

Western Gas Interstate Co.; Tariff Filing

July 10, 1991.

Take notice that on June 18, 1991, Western Gas Interstate Company (Western), submitted for filing Second Revised Sheet No. 10 as part of its FERC Gas Tariff, Second Revised Volume No. 1.

Western states that the tariff sheet is being filed to replace First Revised Sheet No. 10, filed on May 17, 1991, in Docket No. RP89-179-009. Western states that the tariff sheet filed on May 17, 1991, contained a typographical error as to the page designation. Western requests that the foregoing tariff sheet filed May 17, 1991 be removed and replaced with Second Revised Sheet No. 10. Western States that the effective date of the replacement sheet is June 1, 1991.

Western states that copies of the filing have been mailed to its customers and interested state regulatory commissions.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rule 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.211). All such protests should be filed on or before July 17, 1991. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Persons that are already parties to this proceeding need not file a motion to intervene in this matter. Copies of this filing are on file with the Commission and are available for public inspection.

Lois D. Cashell,
Secretary.

[FR Doc. 91-16967 Filed 7-16-91; 8:45 am]

BILLING CODE 6717-01-M

ENVIRONMENTAL PROTECTION AGENCY

[FRL-3975-4]

Proposed Settlement; Radionuclides NESHAP Litigation

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of proposed settlement; request for public comment.

SUMMARY: In accordance with section 113(g) of the Clean Air Act ("Act").

notice is hereby given of a proposed settlement concerning litigation instituted against the Environmental Protection Agency challenging regulations issued pursuant to section 112 of the Clean Air Act to control radionuclide emissions from elemental phosphorus plants. The case is *FMC Corporation v. EPA* (No. 90-1057, D.C. Cir.). EPA published the radionuclide regulations on December 15, 1989 (54 FR 51654).

For a period of thirty [30] days following publication of this notice, the Agency will receive written comments relating to the settlement. EPA or the Department of Justice may withhold or withdraw consent to the proposed settlement if the comments disclose facts or circumstances that indicate that such consent is inappropriate, improper, inadequate, or inconsistent with the requirements of the Act.

Copies of the settlement are available from Timothy D. Backstrom, Pesticides and Toxics Division, Office of General Counsel, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460 (202) 382-7505. Written comments should be sent to Timothy D. Backstrom at the above address and must be submitted on or before August 16, 1991. The settlement has also been filed with the U.S. Court of Appeals for the District of Columbia Circuit and may be inspected there during court business hours in accordance with the procedures of the Clerk's office.

Dated: July 12, 1991.

Gerald H. Yamada,
Acting Assistant Administrator and General Counsel.

[FR Doc. 91-17124 Filed 7-16-91; 8:45 am]

BILLING CODE 6560-50-M

[FRL-3975-1]

Public Water System Supervision Program; Program Revision for the State of Nevada

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Notice of decision and opportunity for hearing.

SUMMARY: Notice is hereby given that the State of Nevada is revising its approved State Public Water System Supervision Program. Nevada has adopted [1] drinking water regulations for eight volatile organic chemicals that correspond to the National Primary Drinking Water Regulations for eight volatile organic chemicals promulgated

by EPA on July 8, 1987 [52 FR 25690] and corrected on July 1, 1988 [53 FR 25108]; and [2] public notice regulations that correspond to the revised EPA public notice requirements promulgated on October 28, 1987 [52 FR 41534]. EPA has determined that these two sets of State program revisions are no less stringent than the corresponding Federal regulations. Therefore, EPA has tentatively decided to approve these State program revisions.

All interested parties are invited to request a public hearing. A request for a public hearing must be submitted by August 16, 1991, to the Regional Administrator at the address shown below. Insubstantial requests for a hearing may be denied by the Regional Administrator. If no timely and appropriate request for a hearing is received and the Regional Administrator does not elect to hold a hearing on his own motion, this determination shall become effective August 16, 1991.

Any request for a public hearing shall include the following: [1] the name, address, and telephone number of the individual, organization, or other entity requesting a hearing; [2] a brief statement of the requesting person's interest in the Regional Administrator's determination and of information that the requesting person intends to submit at such hearing; and [3] the signature of the individual making the request, or, if the request is made on behalf of an organization or other entity, the signature of a responsible official of the organization or other entity.

ADDRESSES: All documents relating to this determination are available for inspection between the hours of 8:30 a.m. and 4 p.m., Monday through Friday, at the following offices: Consumer Health Protection Services, 505 E. King St., Carson City, Nevada 89750; and EPA, Region IX, Water Supply Section, 75 Hawthorne Street, San Francisco, California 94105.

FOR FURTHER INFORMATION CONTACT: Corine Li, Region IX, at the San Francisco address given above; telephone (415) 744-1858 or (FTS) 484-1858.

[Sec. 1413 of the Safe Drinking Water Act as amended [1986]; and 40 CFR 142.10 of the National Primary Drinking Water Regulations]

Dated: June 28, 1991.

Daniel W. McGovern,
Regional Administrator.

[FR Doc. 91-17043 Filed 7-16-91; 8:45 am]

BILLING CODE 6560-50-M

FEDERAL MARITIME COMMISSION

Mediterranean/North Pacific Coast Freight Conference et al; Agreement(s) Filed

The Federal Maritime Commission hereby gives notice of the filing of the following agreement(s) pursuant to section 5 of the Shipping Act of 1984.

Interested parties may inspect and obtain a copy of each agreement at the Washington, DC Office of the Federal Maritime Commission, 1100 L Street, NW, room 10325. Interested parties may submit comments on each agreement to the Secretary, Federal Maritime Commission, Washington, DC 20573, within 10 days after the date of the *Federal Register* in which this notice appears. The requirements for comments are found in § 572.603 of title 46 of the Code of Federal Regulations. Interested persons should consult this section before communicating with the Commission regarding a pending agreement.

Agreement No.: 203-009976-011.

Title: Mediterranean Associated Conferences Agreement.

Parties: Mediterranean/North Pacific Coast Freight Conference, Mediterranean/Puerto Rican Conference, South Europe/U.S.A. Freight Conference, Turkey/U.S. Atlantic and Gulf Rate Agreement, Greece Westbound Conference.

Synopsis: The proposed amendment would add a new provision to the agreement authority which will provide that the Conference members (or the individual carriers thereof) may discuss and agree upon the acquisition and/or use of, and payment for, office facilities, office equipment and other services pertaining to the administration, management, staffing and housekeeping needs of conferences, rate agreements and ocean carriers, including but not limited to computer and tariff filing services, electronic mail and development of statistical information.

Agreement No.: 203-009976-012.

Title: Mediterranean Associated Conferences Agreement.

Parties: Greece Westbound Conference, Mediterranean/North Pacific Coast Freight Conference, Mediterranean/Puerto Rican Conference, South Europe/U.S.A. Freight Conference, Turkey/U.S. Atlantic and Gulf Rate Agreement.

Synopsis: The proposed amendment would delete Greece Westbound Conference and Mediterranean/North Pacific Coast Freight

Conference as parties to the Agreement.

Agreement No.: 217-010051-020.

Title: Mediterranean Space Charter Agreement.

Parties: Compania Trasatlantica Espanola, Compagnie Generale Maritime, Farrell Lines, Inc., "Italia" di Navigazione, S.p.A., Jugolinija, Lykes Bros. Steamship Co., Inc., A.P. Moller-Maersk Line, Nedlloyd Lijnen B.V., Sea-Land Service, Inc., P&O Containers Ltd., Zim Israel Navigation Co., Inc.

Synopsis: The proposed amendment would add British Continental Shipping Line as a party to the Agreement.

Agreement No.: 202-010676-050.

Title: South Europe/U.S.A. Freight Conference.

Parties: Achille Lauro, Compagnie Generale Maritime, Compania Trasatlantica Espanola, S.A., Evergreen Marine Corporation (Taiwan) Ltd., Farrell Lines, Inc., "Italia" di Navigazione, S.p.A., Jugolinija, Jugooceanija, Lykes Lines, A.P. Moller-Maersk Line, Nedlloyd Lines, Sea-Land Service, Inc., P&O Containers Limited, Zim Israel Navigation Company, Ltd.

Synopsis: The proposed amendment would add a new provision to the agreement authority which will provide that the Conference may agree to enter into agreements with other conferences, rate agreements, or carriers to provide office facilities, office equipment and communication needs of such conferences, rate agreements, and ocean carriers including, but not limited to computer and tariff services, electronic mail, and development of statistical information.

Dated: July 11, 1991.

By Order of the Federal Maritime Commission.

[FR Doc. 91-16954 Filed 7-16-91; 8:45 am]

BILLING CODE 6730-01-M

Ocean Freight Forwarder License; Revocations

Notice is hereby given that the following ocean freight forwarder licenses have been revoked by the Federal Maritime Commission pursuant to section 19 of the Shipping Act of 1984 (46 U.S.C. app. 1718) and the regulations of the Commission pertaining to the licensing of ocean freight forwarders, 46 CFR part 510.

License Number: 3199.

Name: Morgan and Brother Manhattan Storage Co., Inc.
Address: 11411 Third Ave., New York, NY 10028.
Date Revoked: June 15, 1991.
Reason: Failed to furnish a valid surety bond.
License Number: 3198.

Name: Monarch Customs Brokers & Forwarders, Inc.
Address: 5 Beekman Street, New York, NY 10038.
Date Revoked: June 21, 1991.
Reason: Failed to furnish a valid surety bond.
License Number: 3311.

Name: La Mar Line Corporation.
Address: 112th Avenue, Miami, FL 33172.
Date Revoked: June 27, 1991.
Reason: Surrendered license voluntarily.
License Number: 2879.

Name: Coleman International, Inc.
Address: #16 The Krogen Center, suite 100, Norfolk VA 23502.
Date Revoked: June 27, 1991.
Reason: Surrendered license voluntarily.
License Number: 1210R.

Name: E.L. Vanderberry Co., Inc.
Address: P.O. Box 3295, Norfolk, VA 23514.
Date Revoked: June 27, 1991.
Reason: Surrendered license voluntarily.
License Number: 510.

Name: The Gallie Corporation.
Address: 17 Battery Place, New York, NY 10004.
Date Revoked: June 30, 1991.
Reason: Surrendered license voluntarily.
Bryant L. VanBrakle,
Acting Director, Bureau of Domestic Regulations.

[FR Doc. 91-16953 Filed 7-16-91; 8:45 am]
BILLING CODE 6730-01-M

Ocean Freight Forwarder License; Applicants

Notice is hereby given that the following applicants have filed with the Federal Maritime Commission applications for licenses as ocean freight forwarders pursuant to section 19 of the Shipping Act of 1984 (46 U.S.C. app. 1718 and 46 CFR part 510).

Persons knowing of any reason why any of the following applicants should not receive a license are requested to contact the Office of Freight Forwarder and Passenger Vessel Operations, Federal Maritime Commission, Washington, DC 20573.

Silver Star Shipping America, Inc., 550 E. Carson Plaza Dr., suite 105, Carson, CA 90746. Officers: Hyun Sik Chun, President, Raymond Kim, Vice President, Hyo Sik Rhee, Outbound Manager, Susan Kim, Inbound Clerk.

Fast Forward Ltd., 8131 Phaeton Drive, Oakland, CA 94605, Jennifer Y.C. Eng, Sole Proprietor.

Ventana Overseas Cargo, Inc., 30-01 37th Ave., Long Island City, NY 11101. Officers: Eleuterio Arcese, Chairman, Paola Arcese, Director, Pier Antonio Baragiola, Director, George Ringhoff, Gen. Manager/Treasurer.

David Grannis, 80 Martha Drive, Fallsington, PA 19054, Sole Proprietor.

Walker International Transportation Inc., 182-16 147th Ave., Jamaica, NY 11413. Officers: Emmett Walker Jr., President, Roger Moll, Vice President, Maria Dempsey, Asst. Vice President.

Phoenix U.S.A., Inc., 3200 S. Andrews Ave., suite 107-108, Ft. Lauderdale, FL 33316. Officers: Hilda Sanchez, President, John Quinones, Vice President.

T. Nakamura CHB, 900 W. Hillcrest Blvd., Inglewood, CA 90301, Tsuyoshi Nakamura, Sole Proprietor.

Trust Air Cargo U.S.A. Co., 1360 N. Wood Dale, Unit 1, Wood Dale Rd., IL 60191. Officers: Jade R. Wu, President, Russell A. Wu, Secretary, Brian Kolb, Gen. Manager, Robert Hsiao, Director.

C Port Miami Corporation, 6960 NW 186th St., Tower No. 2, Unit 32A, Miami, FL 33015, Victor M. Perez, President/Director/Stockholder.

International Container Transport, Inc., 66 York Street, Jersey, NJ 07302. Officers: Juergen Lantzsch, Director, John Kitts, Secretary, Claus-Carsten Ertel, President.

Dynasty International Express, 1301 Sixth Street, St. Q, San Francisco, CA 94107. Gilbert F.K. Liang, Managing Director.

KCC Transport Systems, Inc., 15151 S. Main Street, Gardena, CA 90247. Officers: Arthur A. Lee, President, Jin Kim, Vice President.

Columbia Shipping Inc. (West), 570 North Oak Street, Inglewood, CA 90302. Officers: Ronald F. McDonald, President, Lawrence Bauer, Secretary, Guy Nishida, Vice President.

Dated: July 11, 1991.
 By the Federal Maritime Commission.

Joseph C. Polking,
Secretary.

[FR Doc. 91-16952 Filed 7-16-91; 8:45 am]

BILLING CODE 6730-01-M

FEDERAL RESERVE SYSTEM

Community First Bankshares, Inc.; Formation of, Acquisition by, or Merger of Bank Holding Companies

The company listed in this notice has applied for the Board's approval under section 3 of the Bank Holding Company Act (12 U.S.C. 1842) and § 225.14 of the Board's Regulation Y (12 CFR 225.14) to become a bank holding company or to acquire a bank or bank holding company. The factors that are considered in acting on the applications are set forth in section 3(c) of the Act (12 U.S.C. 1842(c)).

The application is available for immediate inspection at the Federal Reserve Bank indicated. Once the application has been accepted for processing, it will also be available for inspection at the offices of the Board of Governors. Interested persons may express their views in writing to the Reserve Bank indicated for that

application or to the offices of the Board of Governors. Any comment on an application that requests a hearing must include a statement of why a written presentation would not suffice in lieu of a hearing, identifying specifically any questions of fact that are in dispute and summarizing the evidence that would be presented at a hearing.

Comments regarding this application must be received not later than August 5, 1991.

A. Federal Reserve Bank of Minneapolis (James M. Lyon, Vice President) 250 Marquette Avenue, Minneapolis, Minnesota 55480:

1. Community First Bankshares, Inc., Fargo, North Dakota; to merge with Community First North Dakota Bankshares, Inc., Fargo, North Dakota, and thereby indirectly acquire Community First State Bank of Cooperstown, Cooperstown, North Dakota; Community First National Bank & Trust Company of Dickinson, Dickinson, North Dakota; Community First National Bank of Lidgerwood, Lidgerwood, North Dakota; and Community First National Bank of Wahpeton, Wahpeton, North Dakota.

Board of Governors of the Federal Reserve System, July 11, 1991.

Jennifer J. Johnson,
Associate Secretary of the Board.

[FR Doc. 91-16978 Filed 7-16-91; 8:45 am]

BILLING CODE 6210-01-F

FEDERAL TRADE COMMISSION

Granting of Request for Early Termination of the Waiting Period Under the Premerger Notification Rules

Section 7A of the Clayton Act, 15 U.S.C. 18a, as added by title II of the Hart-Scott-Rodino Antitrust Improvements Act of 1976, requires persons contemplating certain mergers or acquisitions to give the Federal Trade Commission and the Assistant Attorney General advance notice and to wait designated periods before consummation of such plans. Section 7A(b)(2) of the Act permits the agencies, in individual cases, to terminate this waiting period prior to its expiration and requires that notice of this action be published in the *Federal Register*.

The following transactions were granted early termination of the waiting period provided by law and the premerger notification rules. The grants were made by the Federal Trade Commission and the Assistant Attorney General for the Antitrust Division of the Department of Justice. Neither agency

intends to take any action with respect to these proposed acquisitions during the applicable waiting period.

TRANSACTIONS GRANTED EARLY TERMINATION BETWEEN: 062491 AND 070591

Name of acquiring person, name or acquired person, name of acquired entity	PMN No.	Date terminated	Name of acquiring person, name or acquired person, name of acquired entity	PMN No.	Date terminated
Spinnaker Investor Partners, L.P., Allied Products Corporation, Allied Products Corporation.....	91-1038	06/24/91	The Proctor & Gamble Company, Ronald O. Perelman, Revlon, Inc	91-0815	07/02/91
Bass, PLC, Glenfed, Inc., Redondo Beach Hotel Associates.....	91-1065	06/24/91	Apogee Enterprises, Inc., Ronald De Ruuk (Administrator of Omni Corp Int'l. B.V.), Norment Industries, Inc.....	91-1097	07/02/91
Corporate Partners, L.P., Phar-Mor, Inc., Phar-Mor, Inc.....	91-1072	06/24/91	HM/Trident, L.P., Occidental Petroleum Corp., OXY USA Inc.....	91-1082	07/05/91
Time Warner, Inc., QVC Network, Inc., QVC Network, Inc.....	91-1080	06/24/91	The Fuji Bank Limited, B/S Investments, Plastofilm Industries, Inc.....	91-1114	07/05/91
The British Petroleum Company p.l.c., Union Pacific Corporation, Union Pacific Resources Company.....	91-1081	06/24/91	Pennzoil Company, American Oil Change Corporation, American Oil Change Corporation.....	91-1119	07/05/91
Societe quebecoise d'initiatives petrolières, Marcel Dutil, Noverco, Inc.....	91-1094	06/26/91	Nippon Steel Corporation, Oracle Systems Corporation, Oracle Systems Corporation.....	91-1126	07/05/91
Smiths Industries plc, Automation Partners, L.P., A.I. Holdings, Inc. (Automated Industries, Inc.).....	91-1010	06/27/91	Ford Motor Company, Chrysler Corporation, Chrysler First Inc.	91-1138	07/05/91
Life Sciences International PLC, Neslab Instruments, Inc., Neslab Instruments, Inc.....	91-1046	06/27/91	FOR FURTHER INFORMATION CONTACT: Sandra M. Peay or Renee A. Horton, Contact Representatives, Federal Trade Commission, Premerger Notification Office, Bureau of Competition, room 303, Washington, DC 20580, (202) 326-3100.		
NovaCare, Inc., Rehab Systems Company, Rehab Systems Company	91-1051	06/27/91	By Direction of the Commission. Donald S. Clark, <i>Secretary.</i>		
Alcatel Alsthom Compagnie Generale D'Electricite, Noranda Inc., Canada Wire & Cable, Inc.....	91-1012	06/28/91	[FR Doc. 91-17011 Filed 7-16-91; 8:45 am] BILLING CODE 6750-01-M		
Public Service Enterprise Group Inc., Chevron Corporation, Chevron U.S.A. Inc. and Chevron Pipe Line Company.....	91-1070	06/28/91	[Docket No. C-3334]		
Alleghany Corporation, Manville Corporation, Manville Sales Corporation	91-1073	06/28/91	Canandaigua Wine Company, Inc.; Prohibited Trade Practices, and Affirmative Corrective Actions		
Public Service Enterprise Group Incorporated, Freeport-McMoRan Inc., Freeport-McMoRan Inc.....	91-1078	06/28/91	AGENCY: Federal Trade Commission.		
Securitas AB, ESSSTAR Incorporated, Arrow Lock Manufacturing Company.....	91-1091	06/28/91	ACTION: Consent order.		
Merrill Lynch & Co., Inc., Merrill Lynch & Co., Inc., Orbit Manufacturing, Inc.....	91-1093	06/28/91	SUMMARY: In settlement of alleged violations of federal law prohibiting unfair acts and practices and unfair methods of competition, this consent order prohibits, among other things, the maker of Cisco, a flavored wine product, from representing that Cisco is a low-alcohol product, from implying that a bottle of Cisco constitutes a single serving, and from displaying Cisco next to low-alcohol products like wine coolers. In addition, the consent order requires new packaging for the product.		
Telephone and Data Systems, Inc. Voting Trust, Cellular Information Systems, Inc., C.I.S. of Tyler Inc.....	91-1095	06/28/91			
Cellular Information Systems, Inc., Telephone and Data Systems, Inc. Voting Trust, Telephone and Data Systems, Inc.....	91-1096	06/28/91			
The Price Company, M Fortunoff of Westbury Corp., M. Fortunoff of Westbury Corp.....	91-1117	06/28/91			
Stephan Schmidheiny, c/o Anova AG, Domas N.V., Domas N.V.....	91-1056	07/01/91			

DATES: Complaint and Order issued June 26, 1991.¹

FOR FURTHER INFORMATION CONTACT:
Judith Wilkenfeld, FTC/S-4002, Washington, DC 20580. (202) 326-3150.

SUPPLEMENTARY INFORMATION: On Tuesday, March 19, 1991, there was published in the **Federal Register**, 56 FR 11559, a proposed consent agreement with analysis In the Matter of Canandaigua Wine Company, Inc., for the purpose of soliciting public comment. Interested parties were given sixty (60) days in which to submit comments, suggestions or objections regarding the proposed form of the order.

A comment was filed and considered by the Commission. The Commission has ordered the issuance of the complaint in the form contemplated by the agreement, made its jurisdictional findings and entered an order to cease and desist, as set forth in the proposed consent agreement, in disposition of this proceeding.

(Sec. 6, 38 Stat. 721; 15 U.S.C. 46. Interprets or applies sec. 5, 38 Stat. 719, as amended; 15 U.S.C. 45, 52)

Benjamin I. Berman,
Acting Secretary.

[FR Doc. 91-17007 Filed 7-16-91; 8:45 am]

BILLING CODE 6750-01-M

[Docket No. 9227]

Chain Pharmacy Association of New York State, Inc.; Prohibited Trade Practices, and Affirmative Corrective Actions

AGENCY: Federal Trade Commission.

ACTION: Consent order.

SUMMARY: In settlement of alleged violations of federal law prohibiting unfair acts and practices and unfair methods of competition, this consent order prohibits, among other things, the pharmaceutical association from organizing or entering into any agreement among pharmacy firms to withdraw from or refuse to enter into a third-party payer prescription drug plan; for ten years, from continuing any meeting of representatives of pharmacy firms at which any person makes any statement concerning whether any firm will enter into or refuse to enter into any third-party payer prescription drug plan; and for eight years, from providing comments or advice to any pharmacist or pharmacy firm on the desirability or

¹ Copies of the Complaint and the Decision and Order are available from the Commission's Public Reference Branch, H-130, 6th Street & Pennsylvania Avenue, NW., Washington, DC 20580.

appropriateness of entering into or refusing to enter into any third-party payer prescription drug plan.

DATES: Complaint issued April 19, 1989. Order issued June 20, 1991.¹

FOR FURTHER INFORMATION CONTACT: Karen Bokat, FTC/S-3308, Washington, DC 20580. (202) 326-2912.

SUPPLEMENTARY INFORMATION: On Tuesday, March 26, 1991, there was published in the **Federal Register**, 56 FR 12534, a proposed consent agreement with analysis In the Matter of Chain Pharmacy Association of New York State, Inc., et al., for the purpose of soliciting public comment. Interested parties were given sixty (60) days in which to submit comments, suggestions or objections regarding the proposed form of the order.

No comments having been received, the Commission has ordered the issuance of the complaint in the form contemplated by the agreement, made its jurisdictional findings and entered an order to cease and desist, as set forth in the proposed consent agreement, in disposition of this proceeding.

(Sec. 6, 38 Stat. 721; 15 U.S.C. 46. Interprets or applies sec. 5, 38 Stat. 719, as amended; 15 U.S.C. 45)

Benjamin I. Berman,
Acting Secretary.

[FR Doc. 91-17008 Filed 7-16-91; 8:45 am]

BILLING CODE 6750-01-M

[Docket No. 9227]

Fay's Inc.; Prohibited Trade Practices, and Affirmative Corrective Actions

AGENCY: Federal Trade Commission.

ACTION: Consent order.

SUMMARY: In settlement of alleged violations of federal law prohibiting unfair acts and practices and unfair methods of competition, this consent order prohibits, among other things, a pharmaceutical firm from organizing or entering into any agreement among pharmacy firms to withdraw from or refuse to enter into a third-party payer prescription drug plan; for ten years, from stating or communicating to any pharmacy firm the intent to enter into or refuse to enter into any third-party payer prescription drug plan; and for eight years, from providing comments or advice to any pharmacist or pharmacy firm on the desirability or appropriateness of entering into or

refusing to enter into any third-party payer prescription drug plan.

DATES: Complaint issued April 19, 1989. Order issued June 25, 1991.¹

FOR FURTHER INFORMATION CONTACT: Karen Bokat, FTC/S-3308, Washington, DC 20580. (202) 326-2912.

SUPPLEMENTARY INFORMATION: On Tuesday, March 26, 1991, there was published in the **Federal Register**, 56 FR 12534, a proposed consent agreement with analysis In the Matter of Chain Pharmacy Association of New York State, Inc., et al., for the purpose of soliciting public comment. Interested parties were given sixty (60) days in which to submit comments, suggestions or objections regarding the proposed form of the order.

No comments having been received, the Commission has ordered the issuance of the complaint in the form contemplated by the agreement, made its jurisdictional findings and entered an order to cease and desist, as set forth in the proposed consent agreement, in disposition of this proceeding.

(Sec. 6, 38 Stat. 721; 15 U.S.C. 46. Interprets or applies sec. 5, 38 Stat. 719, as amended; 15 U.S.C. 45)

Benjamin I. Berman,

Acting Secretary.

[FR Doc. 91-17009 Filed 7-16-91; 8:45 am]

BILLING CODE 6750-01-M

[Docket No. C-3333]

Richard B. Pallack, Inc., et al.; Prohibited Trade Practices, and Affirmative Corrective Actions

AGENCY: Federal Trade Commission.

ACTION: Consent order.

SUMMARY: In settlement of alleged violations of federal law prohibiting unfair acts and practices and unfair methods of competition, this consent order prohibits, among other things, a California retailer of men's clothing and accessories, and an officer of the corporation, from importing, transporting, distributing, delivering, or selling wool products that are misbranded; from removing or mutilating any stamp, tag, label or other identification required by the Wool Products Labeling Act, prior to the time the wool product is sold/delivered; and from misrepresenting the country of origin of such products. In addition, the respondents are required to distribute a

copy of the order to all present and future personnel.

DATES: Complaint and Order issued June 24, 1991.¹

FOR FURTHER INFORMATION CONTACT: Paul Roark, Los Angeles Regional Office, Federal Trade Commission, 11000 Wilshire Blvd., Suite 13209, Los Angeles, CA. 90024. (213) 575-7890.

SUPPLEMENTARY INFORMATION: On Tuesday, February 5, 1991, there was published in the **Federal Register**, 56 FR 4628, a proposed consent agreement with analysis In the Matter of Richard B. Pallack, Inc., et al., for the purpose of soliciting public comment. Interested parties were given sixty (60) days in which to submit comments, suggestions or objections regarding the proposed form of the order.

A comment was filed and considered by the Commission. The Commission has ordered the issuance of the complaint in the form contemplated by the agreement, made its jurisdictional findings and entered an order to cease and desist, as set forth in the proposed consent agreement, in disposition of this proceeding.

(Sec. 6, 38 Stat. 721; 15 U.S.C. 46. Interpret or apply sec. 5, 38 Stat. 719, as amended; Secs. 2-5, 54 Stat. 1128-1130; 15 U.S.C. 45, 68)

Benjamin I. Berman,
Acting Secretary.

[FR Doc. 91-17010 Filed 7-16-91; 8:45 am]

BILLING CODE 6750-01-M

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Health Resources and Services Administration

Statement of Organization, Functions, and Delegations of Authority

Notice is hereby given that the administration of the Disaster Medical Assistance Teams, National Disaster Medical System, and related activities are being transferred within the Public Health Service from the Health Resources and Services Administration to the Office of the Assistant Secretary for Health.

Dated: July 3, 1991.

Louis W. Sullivan,
Secretary.

[FR Doc. 91-16935 Filed 7-16-91; 8:45 am]

BILLING CODE 4160-15-M

¹ Copies of the Complaint and the Decision and Order are available from the Commission's Public Reference Branch, H-130, 8th Street & Pennsylvania Avenue, NW., Washington, DC 20580.

¹ Copies of the Complaint and the Decision and Order are available from the Commission's Public Reference Branch, H-130, 8th Street & Pennsylvania Avenue, NW., Washington, DC 20580.

Centers for Disease Control

[Program Announcement Number 140]

Breast and Cervical Cancer Education for Primary Care Providers**Introduction**

The Centers for Disease Control (CDC) announces the availability of funds in Fiscal Year 1991 for competing cooperative agreements to national health professional organizations to develop breast and cervical cancer primary care provider education programs and disseminate these programs to their membership.

The Public Health Service (PHS) is committed to achieving the health promotion and disease prevention objectives of Healthy People 2000, a PHS-led national activity to reduce morbidity and mortality and improve the quality of life. This announcement is related to the priority area Cancer. (For ordering a copy of Healthy People 2000, see the section **Where to Obtain Additional Information**.)

Authority

This program is authorized by the Public Health Service Act (PHS Act), Section 301(a) (42 U.S.C. 241(a)), and section 317(k)(3) (42 U.S.C. 247b(k)(3)).

Eligible Applicants

Eligible applicants are national professional associations of health care providers; the membership of these organizations must include primary health care providers. Limited competition is justified under this program because the need for broad and effective dissemination of programs and information requires organizations with the capacity and experience to influence the practice behavior of their constituency regarding screening and follow-up for breast and cervical cancer.

Availability of Funds

Approximately \$300,000 will be available in Fiscal Year 1991 for initiating up to four programs. Individual awards are expected to average \$75,000 with a range from \$65,000 to \$85,000. Funding estimates are subject to change. The 12-month budget period is anticipated to begin on or about September 15, 1991. Continuation awards within an approved 3-year project period will be made on the basis of an acceptable continuation application, satisfactory performance, and the availability of funds. Cooperative agreement funds shall not be used for the delivery of clinical/therapeutic services. This program has

no statutory formula. No specific matching funds are required.

Purpose

The purpose of this program is to enter into collaborative relationships with up to four national professional primary care provider organizations to support the development of effective provider education programs and the dissemination of these programs to their membership. The objective of these cooperative agreements for the development and dissemination of education programs for primary care providers is to assure that:

- Women are screened at appropriate intervals,
- Screening tests are performed optimally,
- Women are fully informed and participate in treatment decisions,
- Women with abnormal results receive appropriate diagnostic follow-up and treatment.

In addition, the organizations will work as a consortium with federal and voluntary partners to develop long-term strategies for promoting optimal primary care provider performance, delivered in a culturally appropriate manner, related to the early detection of breast and cervical cancer at the national, state, and local levels.

Program Requirements

In conducting activities to achieve the purpose of this program, the recipient shall be responsible for conducting the activities under A. below and CDC will be responsible for conducting activities under B. below.

A. Recipient Activities

1. Utilize organizational constituents to formulate a plan that describes the development, implementation, evaluation, and dissemination of a program designed to enhance the practice of breast and cervical cancer early detection and control. Any of the following outcomes may be addressed as they relate to breast and cervical cancer screening, diagnosis, and follow-up:

- a. Increased provider knowledge
 - b. Increased provider adherence to screening guidelines
 - c. Increased provider skill in performing screening tests
- (Year 01)

2. Develop or evaluate existing office reminder and tracking systems to facilitate screening and follow-up. (Year 01)

3. Participate with CDC and other professional, federal, and voluntary organizations in 2-3 consortium

meetings during each budget period to implement programmatic objectives. (Years 01-03)

4. Establish specific, measurable, and realistic program objectives at national, state, and local levels to increase the number of primary care providers who adhere to guidelines for breast and cervical cancer screening. (Year 01)

5. Utilize individuals with appropriate training, academic and practical experience to develop, direct, implement, and disseminate the program. (Years 01-03)

6. Assess progress in achievement of program objectives through a well designed evaluation plan which addresses each component of the program. (Years 01-03)

7. Implement the program on a national basis utilizing a widely disseminated strategy (i.e., national conference, journal publication, etc.) (Year 02)

8. Assist CDC in the identification of strategies for implementation of the program at state and local levels. (Years 02-03)

9. Identify and submit pertinent programmatic information for incorporation into a computerized database of health information and health promotion resources (Combined Health Information Database (CHID)). (Years 02-03)

10. Develop and utilize a dissemination strategy for the sharing of information related to breast and cervical cancer provider education with other professional and health care organizations. (Year 03)

B. CDC Activities

1. Collaborate with recipients in the development of meeting agendas and convene personnel from all recipient organizations for regular meetings to review program activities.

2. Collaborate with the recipients in the development, implementation, and delivery of breast and cervical cancer provider education programs

3. Collaborate with recipients in the development of office reminder systems for breast and cervical cancer screening

4. Collaborate in the evaluation of program activities and the analysis of program direction, and provide consultation in the redirection of activities as necessary

5. Periodically update information about provider and public knowledge, attitudes, and practices regarding early detection and control of breast and cervical cancer, taking into account, e.g., racial/ethnic differences.

Review and Evaluation Criteria

The initial application will be reviewed and evaluated based upon the following weighted criteria:

1. A clear and succinct statement of the project's purpose and objectives in the applicant's own words to demonstrate an understanding of the intent of the Recipient Activities described above; (10 points)
2. The extent to which the applicant demonstrates knowledge and understanding of the provider education resources currently available; (15 points)
3. A statement of the applicant's demonstrated ability to disseminate information and influence the professional practice of its members; (20 points)
4. The qualifications and appropriateness of proposed personnel and the adequacy of proposed time allocations of personnel to accomplish the program activities; (15 points)
5. The stated purpose of the cooperative agreement and the quality and feasibility of the proposed program activities for achieving the objectives; (20 points)
6. The quality of the applicant's evaluation plan for monitoring progress toward the achievement of program activities and objectives; and (20 points)
7. The extent to which the budget is reasonable and consistent with the intended use of cooperative agreement funds. (Not weighted)

Executive Order 12372 Review

Applications are not subject to Executive Order 12372, Intergovernmental Review of Federal Programs.

Catalog of Federal Domestic Assistance Number

The Catalog of Federal Domestic Assistance number is 93.283.

Application Submission and Deadline

The original and two copies of the completed application Form PHS-5161-1 must be submitted to Candice Nowicki, Grants Management Officer, Grants Management Branch, Mailstop E-14, Procurement and Grants Office, Centers for Disease Control, 255 East Paces Ferry Road, NE, room 300, Atlanta, Georgia 30305, on or before August 16, 1991. Applications will be considered to meet the deadline if they are received at the above address on or before the stated deadline date or if they bear a postmark of August 16, 1991, and are received in time for submission to the independent review group. Applicants should request a legibly dated U.S. Postal Service postmark or obtain a legibly dated receipt from a commercial

carrier of U.S. Postal Service. Private metered postmarks will not be accepted as proof of timely mailing.

Applications which do not meet the above criteria will be considered late applications, will not be considered in the current competitive cycle and will be returned to the applicant.

Where to Obtain Additional Information

A complete program description, information on application procedures, an application package and business management technical assistance may be obtained from Gordon R. Clapp, Grants Management Specialist, Grants Management Branch, Mailstop E-14, Procurement and Grants Office, Centers for Disease Control, 255 East Paces Ferry Road, NE, Atlanta, Georgia 30305, telephone (404) 842-6508 or FTS 236-6508.

Technical assistance may be obtained from Marion Nadel, Ph.D., or Nancy Cheal, R.N., M.S., Cancer Prevention and Control Branch, Division of Chronic Disease Control and Community Intervention, Mailstop K-52, Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control, Atlanta, GA 30333, telephone (404) 488-5496 or FTS 236-5496.

Please refer to Announcement Number 140 when requesting information and submitting any application on the Request for Assistance.

Potential applicants may obtain a copy of Healthy People 2000 (Full Report; Stock No. 017-001-00474-0) or Healthy People 2000 (Summary Report; Stock No. 017-001-00473-1) through the Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325 (Telephone 202-783-3238).

Dated: July 11, 1991.

Robert L. Foster,

*Acting Director, Office of Program Support
Centers for Disease Control.*

[FR Doc. 91-10977 Filed 7-16-91; 8:45 am]

BILLING CODE 4160-18-M

[Announcement Number 148]

Cooperative Agreement Program for Centers for Agricultural Research, Education, and Disease and Injury Prevention

Introduction

The Centers for Disease Control (CDC)/National Institute for Occupational Safety and Health (NIOSH) announces the availability of Fiscal Year 1991 funds for cooperative

agreements with universities to establish centers for agricultural research, education, and disease and injury prevention. The cooperative agreement program will significantly strengthen the occupational public health infrastructure by integrating resources for occupational safety and health research and public health prevention programs at the State and local levels. The Public Health Service (PHS) is committed to achieving the health promotion and disease prevention objectives of Healthy People 2000, a PHS-led national activity to reduce morbidity and mortality and improve the quality of life. This announcement is related to the priority area of Occupational Safety and Health. (For ordering a copy of Healthy People 2000, see section WHERE TO OBTAIN ADDITIONAL INFORMATION.)

Authority

This program is authorized under section 20(a) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 669(a)) and the Public Health Service Act, section 301(a) (42 U.S.C. 241(a)), as amended.

Eligible Applicants

Eligible applicants include state and private universities and university-affiliated, not-for-profit medical centers within the United States of America. The restriction of eligible applicants is due to the Fiscal Year 1990 appropriations language that initiated this program and states that centers for agricultural occupational safety and health will be established at universities. In Fiscal Year 1990, Centers were established in DHHS regions VII and IX. Because of programmatic and regional differences throughout agriculture in the United States, only one center will be established in any DHHS region. Therefore, DHHS regions VII and IX are excluded in FY 1991.

Availability of Funds

Approximately \$900,000 will be available in Fiscal Year 1991 to fund one of three new centers. It is expected that the average award will be approximately \$450,000, ranging from approximately \$300,000 to \$800,000. Funding estimates may vary and are subject to change. The awards are expected to become effective on or about September 30, 1991, and will be awarded for a 12-month budget period within a project period up to 5 years.

Continuation awards within the cooperative agreement will be made on the basis of satisfactory progress and the availability of funds.

Purpose

This cooperative agreement program is designed to address the research, education, and intervention activities that are unique to agriculture. To achieve this objective, the program will establish centers for agricultural research, education, and disease and injury prevention. The objectives are as follows:

1. Develop and conduct applied preventive research related to the occupational health and safety of agricultural workers and their families.
2. Develop model educational programs on agricultural health and safety for agricultural workers and their families.
3. Develop model programs for the prevention of illness and injury among agricultural workers and their families.
4. Evaluate agricultural injury and disease prevention programs implemented by agricultural extension programs, state health departments, Federal agencies, and others.
5. Conduct applied research and evaluation of engineering control technology and procedures developed by Federal, State, and private agencies and research on ergonomic control technology.
6. Provide consultation and/or training to researchers, health and safety professionals, graduate/professional students, and agricultural extension agents.

Program Requirements

The activities related to the development of centers for agricultural research, education, and disease and injury prevention require substantial CDC/NIOSH collaboration and involvement. The nature and extent of these activities are described as follows:

A. Recipient Activities

1. Develop and conduct applied research related to the occupational health and safety of agricultural workers and their families.
2. Develop and conduct education and training programs on agricultural health and safety for agricultural workers and their families, extension/outreach personnel, and for graduate/professional education.
3. Develop a research protocol or protocols for the Center for Agricultural Research, Education, Disease and Injury Prevention. Obtain peer review of the protocol and revise and finalize as required for final approval.
4. Where appropriate, collaborate with NIOSH and other CDC scientists on complementary research areas.
5. Collaborate with NIOSH and other CDC staff in reporting and

disseminating research results and relevant health and safety education and training information to appropriate Federal, State, and local agencies, health care providers; the scientific community; agricultural workers and their families; and management and union representatives.

B. CDC/NIOSH Activities

1. Provide technical assistance through site visits and correspondence in the areas of program development, implementation, maintenance, and priority setting related to the cooperative agreement.
2. Provide scientific collaboration for appropriate aspects of the program.
3. Assist in the reporting and dissemination of research results and relevant health and safety education and training information to appropriate Federal, State, and local agencies; health care providers; the scientific community; agricultural workers and their families; and management and union representatives.

Evaluation Criteria

The application, including a proposal for both research and training components, will be reviewed based on evidence that specifically describes the applicant's ability to meet the following criteria:

1. Responsiveness to the objectives of the cooperative agreement program including the applicant's understanding of the objectives of the proposed cooperative agreement and the relevance of the proposal to the objectives. (20%)
2. Feasibility of meeting the proposed goals of the cooperative agreement program including the proposed schedule for initiating and accomplishing each of the activities of the cooperative agreement and the proposed method for evaluating the accomplishments. (20%)
3. Strength of the program design in addressing the distinct characteristics, populations, and needs in agricultural research and education for the region. (20%)
4. Strength of the proposed program for agricultural health and safety in the areas of prevention, research, education, and multidisciplinary approach. (10%)
5. Efficiency of resources and novelty of program. This includes the efficient use of existing and proposed personnel with assurances of a major time commitment of the Project Director to the program, and the novelty of program approach. (15%)
6. Training and experience of proposed Program Director and staff, including a Program Director who is a

recognized scientist and technical expert and staff with training or experience sufficient to accomplish proposed program. (15%)

7. The extent to which the program budget is reasonable, clearly justified, and consistent with the intended use of funds. (Not scored)

Other Requirements**A. Human Subjects**

This program involves research on human subjects; therefore, all applicants must comply with the Department of Health and Human Services regulations (Pub. L. 93-148) regarding the protection of human subjects. Assurance must be provided that demonstrates the project or activity will be subject to initial and continuing review by an appropriate institutional review committee. The applicant will be responsible for providing assurance in accordance with the appropriate guidelines and form provided in the application kit.

B. Paperwork Reduction Act

Projects funded through the cooperative agreement mechanism of this program involving the collection of information from 10 or more individuals will be subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act.

Executive Order 12372 Review

Applications are not subject to review by Executive Order 12372.

Catalog of Federal Domestic Assistance Number

The Catalog of Federal Domestic Assistance Number (CFDA) for this program is 93.262.

Application Submission and Deadline

The original and two copies of the application PHS Form 5161-1 must be submitted to Henry S. Cassell, III, Grants Management Officer, Grants Management Branch, Procurement and Grants Office, Centers for Disease Control, Mailstop E-14, 255 East Paces Ferry Road, NE, room 300, Atlanta, Georgia 30305, on or before August 20, 1991.

1. Deadline: Applications shall be considered as meeting the deadline if they are either:

- a. Received on or before the deadline date, or
 - b. Sent on or before the deadline date and received in time for submission to the independent review group.
- Applicants must request a legibly dated U.S. Postal Service postmark or obtain a legibly dated receipt from a commercial carrier or the U.S. Postal Service. Private

metered postmarks shall not be acceptable as proof of timely mailings.

2. Late Applications: Applications which do not meet the criteria in 1.a or 1.b above are considered late applications. Late applications will not be considered in the current competition and will be returned to the applicant.

Where To Obtain Additional Information

Additional information on application procedures, copies of application forms, other material and business management technical assistance may be obtained from Bill Foley, Grants Management Specialist, Grants Management Branch, Procurement and Grants Office, Centers for Disease Control, Mailstop E-14, 255 East Paces Ferry Road, NE., room 300, Mail Stop E-14, Atlanta, Georgia 30305, or by calling (404) 842-6630 or FTS 236-6630.

For programmatic technical assistance, contact Dr. Stephen A. Olenchock, Division of Respiratory Disease Studies, National Institute for Occupational Safety and Health, Centers for Disease Control, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505, or by calling (304) 291-4256 or FTS 923-4256. Please refer to announcement number 148 when requesting information and submitting an application.

Potential applicants may obtain a copy of Healthy People 2000 (Full

Report, Stock No. 017-001-00474-0) or Healthy People 2000 (Summary Report, Stock No. 017-001-00473-1) through the Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325 (telephone (202) 783-3238).

Dated: July 11, 1991.

Larry W. Sparks,

Acting Director, National Institute for Occupational Safety and Health.

[FR Doc. 91-16974 Filed 7-16-91; 8:45 am]

BILLING CODE 4160-19-M

Administration for Children and Families

Revised Fiscal Year 1991 Reallocation for Basic Support and Protection and Advocacy Funds to States for Developmental Disabilities Expenditures

AGENCY: Administration on Developmental Disabilities, Administration for Children and Families, Department of Health and Human Services.

ACTION: Correction notice: Revised Fiscal Year 1991 Reallocation Amounts under the Basic Support and Protection and Advocacy programs.

SUMMARY: This issuance sets forth the revised Fiscal Year 1991 reallocation amounts to States administering the

Basic Support and Protection and Advocacy programs. This revision is required to correct the reallocation amounts published in the *Federal Register* on April 30, 1991, (56 FR 19868) which were based on appropriations prior to the sequestration. In accordance with the Omnibus Budget Reconciliation Act of 1990 (OBRA), a sequester was implemented which decreased the appropriations available for Basic Support and Protection and Advocacy programs by \$838 and \$273, respectively. Therefore, the funds available for reallocation to the States were reduced. Funds unavailable to the Trust Territories of the Pacific Islands under the terms of the Compact of Free Association are available for reallocation and are re-distributed in the second column of the table below. The third column in the table below represents the revised final allotment for the Developmental Disabilities Basic Support and Protection and Advocacy programs in Fiscal Year 1991. The adjusted reallocations and revised allotments published herein supersede those published on April 30, 1991.

FOR FURTHER INFORMATION CONTACT: Bettye J. Mobley, Chief, Formula Grants Management Branch, room 341-F, HHH Building, 200 Independence Avenue, SW., Washington, DC 20201, Telephone number (202) 245-7220.

The revised amounts are set forth below:

ADMINISTRATION ON DEVELOPMENTAL DISABILITIES FY 91 BASIC SUPPORT FORMULA GRANT TABLE

	Initial basic services allotment	Adjusted reallocation	Revised allotment
Total.....	\$64,409,000	\$—0—	\$64,408,162
Alabama.....	1,296,703	4,875	1,301,578
Alaska.....	350,000	1,315	351,315
American Samoa.....	200,000	751	200,751
Arizona.....	776,711	2,920	779,631
Arkansas.....	752,043	2,827	754,870
California.....	5,349,910	20,391	5,370,301
Colorado.....	651,456	2,449	653,905
Connecticut.....	620,831	2,334	623,165
District of Columbia.....	350,000	1,315	351,315
Delaware.....	350,000	1,315	351,315
Florida.....	2,708,033	10,182	2,718,215
Georgia.....	1,611,331	6,058	1,617,389
Guam.....	200,000	751	200,751
Hawaii.....	350,000	1,315	351,315
Idaho.....	350,000	1,315	351,315
Illinois.....	2,625,276	9,871	2,635,147
Indiana.....	1,443,915	5,429	1,449,344
Iowa.....	783,114	2,944	786,058
Kansas.....	588,175	2,211	590,386
Kentucky.....	1,195,838	4,496	1,200,334
Louisiana.....	1,378,243	5,182	1,383,425
Maine.....	355,857	1,338	357,195
Maryland.....	913,269	3,433	916,702
Massachusetts.....	1,237,162	4,651	1,241,813
Michigan.....	2,309,476	8,683	2,318,159
Minnesota.....	986,642	3,709	990,351
Mississippi.....	929,543	3,495	933,038
Missouri.....	1,301,722	4,894	1,306,616
Montana.....	350,000	1,315	351,315
Nebraska.....	395,190	1,485	396,675

ADMINISTRATION ON DEVELOPMENTAL DISABILITIES FY 91 BASIC SUPPORT FORMULA GRANT TABLE—Continued

	Initial basic services allotment	Adjusted reallocation	Revised allotment
Nevada.....	350,000	1,315	351,315
New Hampshire.....	350,000	1,315	351,315
New Jersey.....	1,461,872	5,496	1,467,368
New Mexico.....	423,525	1,592	425,117
New York.....	3,990,161	15,003	4,005,164
North Carolina.....	1,793,957	6,745	1,800,702
North Dakota.....	350,000	1,315	351,315
Northern Mariana.....	200,000	751	200,751
Ohio.....	2,802,194	10,536	2,812,730
Oklahoma.....	857,531	3,224	860,755
Oregon.....	651,960	2,451	654,411
Pennsylvania.....	3,093,556	11,631	3,105,187
Puerto Rico.....	2,253,751	8,474	2,262,225
Rhode Island.....	350,000	1,315	351,315
South Carolina.....	1,042,176	3,918	1,046,094
South Dakota.....	350,000	1,315	351,315
Tennessee.....	1,421,913	5,346	1,427,259
Texas.....	3,970,566	14,929	3,985,495
Trust Territories*.....	283,893	¹ - 241,351	41,704
Utah.....	473,192	1,779	474,971
Vermont.....	350,000	1,315	351,315
Virginia.....	1,356,078	5,098	1,361,176
Virgin Islands.....	200,000	751	200,751
Washington.....	994,925	3,740	998,665
West Virginia.....	715,644	2,690	718,334
Wisconsin.....	1,261,666	4,743	1,266,409
Wyoming.....	350,000	1,315	351,315
*Trust Territories consists of:			
Palau.....	41,704	0	41,704
Micronesia.....	¹ 156,539	- 156,120	0
Marshall Islands.....	¹ 85,650	- 85,231	0

¹ In accordance with the Omnibus Budget Reconciliation Act of 1990, a sequester of 0.0013 percent was implemented which reduced the FY 1991 Basic Support appropriation by \$838. The deduction was taken from funds withheld from the Trust Territories of the Pacific Islands, thereby reducing the amount available for reallocation to the States.

ADMINISTRATION ON DEVELOPMENTAL DISABILITIES FY 91 PROTECTION AND ADVOCACY FORMULA GRANT TABLE

	Initial protection and advocacy allotment	Adjusted reallocation	Revised allotment
Total.....	\$20,982,000	\$ - 0 -	\$20,981,727
Alabama.....	384,207	1,871	385,878
Alaska.....	200,000	869	200,869
American Samoa.....	107,000	465	107,465
Arizona.....	243,744	1,060	244,834
Arkansas.....	222,922	969	223,891
California.....	1,587,102	7,141	1,594,243
Colorado.....	218,207	949	219,156
Connecticut.....	207,387	902	208,289
District of Columbia.....	200,000	869	200,869
Delaware.....	200,000	869	200,869
Florida.....	803,217	3,493	806,710
Georgia.....	477,634	2,077	479,711
Guam.....	107,000	465	107,465
Hawaii.....	200,000	869	200,869
Idaho.....	200,000	869	200,869
Illinois.....	777,994	3,384	781,378
Indiana.....	428,015	1,861	429,876
Iowa.....	231,985	1,009	232,994
Kansas.....	200,000	869	200,869
Kentucky.....	354,272	1,541	355,813
Louisiana.....	408,540	1,777	410,317
Maine.....	200,000	869	200,869
Maryland.....	270,754	1,177	271,931
Massachusetts.....	366,366	1,593	367,959
Michigan.....	684,144	2,976	687,120
Minnesota.....	292,469	1,272	293,741
Mississippi.....	275,509	1,198	276,707
Missouri.....	385,791	1,678	387,469
Montana.....	200,000	869	200,869
Nebraska.....	200,000	869	200,869
Nevada.....	200,000	869	200,869
New Hampshire.....	433,102	1,883	434,985
New Jersey.....	200,000	869	200,869
New Mexico.....	1,181,616	5,140	1,186,756

ADMINISTRATION ON DEVELOPMENTAL DISABILITIES FY 91 PROTECTION AND ADVOCACY FORMULA GRANT TABLE—Continued

	Initial protection and advocacy allotment	Adjusted reallocation	Revised allotment
North Carolina	531,698	2,312	534,010
North Dakota	200,000	869	200,869
Northern Mariana	107,000	465	107,465
Ohio	830,305	3,611	833,916
Oklahoma	254,398	1,106	255,504
Oregon	208,809	908	209,717
Pennsylvania	916,342	3,986	920,328
Puerto Rico	668,101	2,906	671,007
Rhode Island	200,000	869	200,869
South Carolina	308,936	1,343	310,279
South Dakota	200,000	869	200,869
Tennessee	421,641	1,832	423,196
Texas	1,178,187	5,125	1,183,312
Trust Territories*	107,000	1 - 91,009	15,718
Utah	200,000	869	200,869
Vermont	200,000	869	200,869
Virginia	401,880	1,748	403,628
Virgin Islands	107,000	465	107,465
Washington	295,163	1,283	296,446
West Virginia	223,003	970	223,973
Wisconsin	373,807	1,626	375,433
Wyoming	200,000	869	200,869
*Trust Territories consists of:			
Palau	15,718	0	15,718
Micronesia	1 59,000	- 58,863	0
Marshall Islands	1 32,282	- 32,146	0

* In accordance with the Omnibus Budget Reconciliation Act of 1990, a sequester of 0.0013 percent was implemented which reduced the FY 1991 Protection and Advocacy appropriation by \$273. The deduction was taken from funds withheld from the Trust Territories of the Pacific Islands, thereby reducing the amount available for reallocation to the States.

(Catalog of Federal Assistance Program, Number 93.630 Development Disabilities—Basic Support and Advocacy Grants.)

Dated: July 11, 1991.

Will Wolstein,

Acting Commissioner, Administration on Developmental Disabilities.

Approved: July 11, 1991.

Donna N. Givens,

Deputy Assistant Secretary for Children and Families.

[FR Doc. 91-16997 Filed 7-16-91; 8:45 am]

BILLING CODE 4130-01-M

Food and Drug Administration

[Docket No. 91D-0178]

Surgeon's Gloves and Patient Examination Gloves; Defects—Criteria for Direct Reference Seizure; Compliance Policy Guide; Availability

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice.

SUMMARY: The Food and Drug Administration (FDA) is announcing the availability of the Compliance Policy Guide (CPG) 7124.31, "Surgeons' Gloves and Patient Examination Gloves; Defects—Criteria for Direct Reference Seizure."

ADDRESSES: Submit written requests for single copies of CPG 7124.31 "Surgeons' Gloves and Patient Examination Gloves;

Defects—Criteria for Direct Reference Seizure" to the Division of Small Manufacturers Assistance, Center for Devices and Radiological Health (HFZ-220), Food and Drug Administration, 5600 Fishers Lane, Rockville, MD 20857. Requests should be identified with the docket number found in brackets in the heading of this document. Send two self-addressed adhesive labels to assist that office in processing your requests. CPG 7124.31 is available for public examination in the Dockets Management Branch (HFA-305), Food and Drug Administration, room 1-23, 12420 Parklawn Dr., Rockville, MD 20857 between 9 a.m. and 4 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT:

Eric Latish, Center for Devices and Radiological Health (HFZ-323), Food and Drug Administration, 1390 Piccard Dr., Rockville, MD 20857, 301-427-1116.

SUPPLEMENTARY INFORMATION: Surgeons and patient examination gloves have been increasingly relied upon by health care workers as a barrier to the transmission of human immunodeficiency virus (HIV) and other blood and fluid-borne infectious agents. On August 21, 1987, the Centers for Disease Control recommended that health care workers wear medical gloves routinely because of the potential for transmission of HIV between patients and health care workers. Defects in gloves, such as holes, are

hard to detect and can compromise the effectiveness of the glove barrier and pose risk to the health of both patients and health care workers. Id. Surgeon's gloves and patient examination gloves that contain holes are adulterated devices. FDA issued guidelines to the field districts on September 28, 1988, to sample and analyze surgeon's and patient examination gloves of both domestic and foreign origin. Gloves were leak tested using the 1,000 milliliter (mL) water method. Regulatory actions under existing authority, such as seizures and detentions of specific glove lots, were handled on a case-by-case basis. Surgeon's glove lots with failure rates of 10 percent (10 units in 100) or higher, and patient examination gloves with failure rates of 20 percent (20 units in 100) or higher were subject to regulatory action. In view of the rapid increase in demand for imported and domestically produced gloves, and the public health benefits of further reducing the risk of transmission of HIV and other blood and fluid-borne infectious agents and to better utilize agency resources, on November 21, 1989 (54 FR 48218), FDA published in the *Federal Register* proposed rules to insure that manufacturers of gloves manufacture gloves that are adulterated. The final rule, which establishes the sample plans and test method the agency will use to determine if the gloves are adulterated,

was published on December 12, 1990 (55 FR 51254).

FDA will collect samples from lots of gloves to perform the test for defects by the water leak method using 1,000 mL water as described in 21 CFR 800.20(b) *Test method* of the final rule entitled "Patient examination gloves and surgeon's gloves; sample plans and test method for leakage defects; adulteration." (See 55 FR 51254 to 51258, December 12, 1990.)

This sampling inspection plan has been derived from MIL-STD-105E, (the military standard for "Sampling Procedures and Tables for Inspection by Attributes," May 10, 1989). Based on the acceptable quality levels (AQL) found in this standard, FDA has deemed actionable surgeon's gloves at a failure rate of 2.5 percent AQL or higher and for patient examination gloves at a failure rate of 4.0 percent AQL or higher [at general inspection level II/normal inspection.] Single sampling will be used for lots less than or equal to 1,200 gloves. (See 55 FR 51257 through 51258, December 12, 1990). For lots greater than 1,200 gloves, multiple sampling will be used.

A direct reference seizure is one that bypasses review by the Center for Devices and Radiological Health. Instead, the district office recommendation is processed only by the Office of Regulatory Affairs, the Office of General Counsel, and the U.S. Attorney, in that order.

The statements made herein are not intended to create or confer any rights, privileges or benefits on or for any private person, but are intended merely for internal guidance.

This notice is issued under 21 CFR 10.85.

Dated: July 10, 1991.

Ronald G. Chesemore,
Associate Commissioner for Regulatory Affairs.

[FR Doc. 91-16982 Filed 7-16-91; 8:45 am]

BILLING CODE 4160-01-M

Public Health Service

Centers for Disease Control; Statement of Organization, Functions, and Delegations of Authority

Part H, chapter HC (Centers for Disease Control) of the Statement of Organization, Functions, and Delegations of Authority of the Department of Health and Human Services (45 FR 67772-67776, dated October 14, 1980, and corrected at 45 FR 69296, October 20, 1980, as amended most recently at 56 FR 28920 dated June 25, 1991) is amended to reflect the

following organizational changes within the Epidemiology Program Office: (1) Establishment of the Scientific Communications Program; (2) title change of the Division of Field Services to Division of Field Epidemiology and establishment of the Office of the Director; (3) revision of the functional statement for the Division of Surveillance and Epidemiologic Studies, title change to Division of Surveillance and Epidemiology, and establishment of the Office of the Director; and (4) establishment of the Division of Training and the Office of the Director.

Section HC-B, Organization and Functions, is hereby amended as follows:

- After the functional statement for the Epidemiology Program Office (HCB), Office of the Director (HCB1), insert the following: Scientific Communications Program (HCB12). (1) Plans, coordinates production, edits, and publishes the Morbidity and Mortality Weekly Report (MMWR) series of publications and various special reports and publications; (2) provides graphics services and support for the MMWR and related publications for EPO; (3) provides editorial services and support to EPO; (4) develops, implements, and evaluates innovative methods for the communication of scientific information by EPO; (5) provides consultation and training on scientific communications to EPO and other CDC components, and to other agencies and organizations.

- Delete the title for the Division of Field Services (HCB3) and substitute the following title: Division of Field Epidemiology (HCB3). After the functional statement for the Division of Field Epidemiology, add the following title and statement: Office of the Director (HCB31). (1) Provides leadership and overall direction for the Division of Field Epidemiology; (2) provides leadership and guidance on policy, program planning, program management, and operations; (3) provides leadership and management oversight in assisting States in the delivery of epidemiologic services and in the development of a national epidemiology and surveillance network; in training epidemiology generalists for future positions at CDC, other Federal agencies, and State and local health department; and in managing the Global EIS Program; (4) provides liaison with other CDC organizations; other Federal, State, and local agencies; international organizations; the Council of State and Territorial Epidemiologists; and other outside organizations.

- Delete in their entirety the title and functional statement for the Division of Surveillance and Epidemiologic Studies

(HCB5) and substitute the following: Division of Surveillance and Epidemiology (HCB5). (1) Collects, performs analyses, and disseminates public health surveillance information; (2) develops, implements, and evaluates innovative statistical and data management methods for application to public health surveillance and epidemiology; (3) coordinates activities of the CDC Surveillance Coordination Group; (4) manages and operates the National Notifiable Diseases Surveillance System and the 121 Cities Mortality Reporting System and produces statistical tables and graphics for the MMWR and associated publications; (5) develops, manages, and supports effective national telecommunications systems for surveillance; (6) develops improved software for use in surveillance and epidemiology; (7) provides consultation, technical assistance, and training on surveillance to CDC and to other agencies and domestic and international organizations; (8) develops, coordinates, and conducts special epidemiologic and statistical studies; (9) provides consultation on analytic methods and data management on surveillance and epidemiologic issues throughout CDC; (10) maintains, manages, and coordinates selected data bases for use in collaborative research; (11) coordinates, with other CIOs the implementation of the data and surveillance objectives for the nation.

Office of the Director (HCB51). (1) Provides leadership and overall direction for the Division of Surveillance and Epidemiology; (2) provides leadership and guidance on policy, program planning, program management, and operations; (3) establishes Division goals, objectives, and priorities; (4) monitors progress in implementation of projects and achievement of objectives; (5) provides management, administrative, and support services, and coordinates with appropriate EPA offices on program and administrative matters; (6) provides liaison with other CDC organizations, other governmental agencies, international organizations, the Council of State and Territorial Epidemiologists, and other outside groups; (7) plans, allocates, and monitors resources; (8) provides scientific leadership and guidance to the Division to assure highest scientific quality and ethical standards; (9) plans the activities of the CDC Surveillance Coordination Group; (10) coordinates the implementation of the EPO activities related to the Year 2000 objectives.

4. After the statement for the Division of Surveillance and Epidemiology (HCB5), Office of the Director (HCB51), add the following: Division of Training (HCB6). (1) Plans, directs, and coordinates the Epidemic Intelligence Service (EIS) Program; (2) plans, directs, and coordinates CDC's Preventive Medicine Residency (PMR) Program; (3) serves as CDC focus for promotion and development of training methods and materials in applied epidemiology for EIS Officers, other CDC staff, State and local public health workers, and others; (4) provides consultation to Federal, State, local, and international agencies on epidemiologic training and practice.

Office of the Director (HCB61). (1) Provides leadership and overall direction for the Division of Training; (2) provides leadership and guidance on policy, program planning, program management and operations; (3) establishes Division goals, objectives, and priorities; (4) provides management, administrative, and support services, and coordinates with appropriate EPO offices on program and administrative matters; (5) provides liaison with other CDC organizations, the Epidemiology Advisory Committee (EAC), and other agencies and institutions; (6) plans, allocates, and monitors resources.

Effective Date: June 28, 1991.

Walter R. Dowdle,

*Deputy Director, Centers for Disease Control.
[FR Doc. 91-18975 Filed 7-16-91; 8:45 am]*

BILLING CODE 4160-18-M

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Office of the Assistant Secretary for Housing—Federal Housing Commissioner

[Docket No. N-91-3292; FR-4000-N-01]

Mortgage and Loan Insurance Programs Under the National Housing Act—Debenture Interest Rates

AGENCY: Office of the Assistant Secretary for Housing—Federal Housing Commissioner, (HUD).

ACTION: Notice of change in debenture interest rates.

SUMMARY: This notice announces changes in the interest rates to be paid on debentures issued with respect to a loan or mortgage insured by the Federal Housing Commissioner under the provisions of the National Housing Act (the "Act"). The interest rate for debentures issued under section 221(g)(4) of the Act during the six-month

period beginning July 1, 1991, is 8 1/2 percent. The interest rate for debentures issued under any other provision of the Act is the rate in effect on the date that the commitment to insure the loan or mortgage was issued, or the date that the loan or mortgage was endorsed (or initially endorsed if there are two or more endorsements) for insurance, whichever rate is higher. The interest rate for debentures issued under these other provisions with respect to a loan or mortgage committed or endorsed during the six-month period beginning July 1, 1991, is 8 1/2 percent.

FOR FURTHER INFORMATION CONTACT:

Fred E. McLaughlin, Financial Policy Division, room 9132, Department of Housing and Urban Development, 451 Seventh Street SW., Washington, DC 20410. Telephone (202) 708-4325 (this is not a toll-free number).

SUPPLEMENTARY INFORMATION: Section 224 of the National Housing Act [24 U.S.C. 1715o] provides that debentures issued under the Act with respect to an insured loan or mortgage (except for debentures issued pursuant to section 221(g)(4) of the Act) will bear interest at the rate in effect on the date the commitment to insure the loan or mortgage was issued, or the date the loan or mortgage was endorsed (or initially endorsed if there are two or more endorsements) for insurance, whichever rate is higher. This provision is implemented in HUD's regulations at 24 CFR 203.405, 203.479, 207.259(e)(6), and 220.830. Each of these regulatory provisions states that applicable rates of interest will be published twice each year as a notice in the *Federal Register*.

Section 224 further provides that the interest rate on these debentures will be set from time to time by the Secretary of HUD, with the approval of the Secretary of the Treasury, in an amount not in excess of the interest rate determined by the Secretary of the Treasury pursuant to a formula set out in the statute.

The Secretary of the Treasury (1) has determined, in accordance with the provisions of section 224, that the statutory maximum interest rate for the period beginning July 1, 1991, is 8 1/2 percent and (2) has approved the establishment of the debenture interest rate by the Secretary of HUD at 8 1/2 percent for the six-month period beginning July 1, 1991. This interest rate will be the rate borne by debentures issued with respect to any insured loan or mortgage (except for debentures issued pursuant to section 221(g)(4)) with an insurance commitment or endorsement date (as applicable) within the last six months of 1991.

For convenience of reference, HUD is publishing the following chart of debenture interest rates applicable to mortgages committed or endorsed since January 1, 1980:

Effective interest rate	On or after	Prior to
9 1/2	Jan. 1, 1980	July 1, 1980
9%	July 1, 1980	Jan. 1, 1981
11 1/4	Jan. 1, 1981	July 1, 1981
12%	July 1, 1981	Jan. 1, 1982
12 1/4	Jan. 1, 1982	Jan. 1, 1983
10%	Jan. 1, 1983	July 1, 1983
10 1/2	July 1, 1983	Jan. 1, 1984
11 1/2	Jan. 1, 1984	July 1, 1984
13%	July 1, 1984	Jan. 1, 1985
11 1/4	Jan. 1, 1985	July 1, 1985
11 1/2	July 1, 1985	Jan. 1, 1986
10 1/4	Jan. 1, 1986	July 1, 1986
8 1/4	July 1, 1986	Jan. 1, 1987
8	Jan. 1, 1987	July 1, 1987
9	July 1, 1987	Jan. 1, 1988
9 1/2	Jan. 1, 1988	July 1, 1988
9 1/4	July 1, 1988	Jan. 1, 1989
9 1/2	Jan. 1, 1989	July 1, 1989
9	July 1, 1989	Jan. 1, 1990
8 1/4	Jan. 1, 1990	July 1, 1990
9	July 1, 1990	Jan. 1, 1991
8 1/4	Jan. 1, 1991	July 1, 1991
8 1/2	July 1, 1991	

Section 221(g)(4) of the Act provides that debentures issued pursuant to that paragraph (with respect to the assignment of an insured mortgage to the Secretary) will bear interest at the "going Federal rate" in effect at the time the debentures are issued. The term "going Federal rate", as used in that paragraph, is defined to mean the interest rate that the Secretary of the Treasury determines, pursuant to a formula set out in the statute, for the six-month periods of January through June and July through December of each year. Section 221(g)(4) is implemented in the HUD regulations at 24 CFR 221.790.

The Secretary of the Treasury has determined that the interest rate to be borne by debentures issued pursuant to section 221(g)(4) during the six-month period beginning July 1, 1991, is 8 1/2 percent.

HUD expects to publish its next notice of change in debenture interest rates in December 1991.

The subject matter of this notice falls within the categorical exclusion from HUD's environmental clearance procedures set forth in 24 CFR 50.20(1). For that reason, no environmental finding has been prepared for this notice.

{Secs. 211, 221, 224, National Housing Act, 12 U.S.C. 1715b, 1715l, 1715o; sec. 7(d). Department of HUD Act, 42 U.S.C. 3535(d).

Dated: July 3, 1991.
Ronald A. Rosenfeld,
*General Deputy Assistant Secretary for
 Housing Commissioner.*
[FR Doc. 91-16949 Filed 7-16-91; 8:45 am]
BILLING CODE 4210-27-M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management
[**ID-020-4212-12**]

**Burley District; Availability of the
 Proposed Burley District Land Tenure
 Adjustment Land Use Plan
 Amendment**

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of availability of the proposed Burley District land tenure adjustment land use plan amendment.

SUMMARY: A proposed land use plan amendment document for the Cassia and Monument Resource Management Plans and the Malad Hills and Twin Falls Management Framework Plans has been completed. This plan amendment proposes to transfer approximately 72,000 acres of public land into private or State of Idaho ownership in return for an equal, if not greater, amount of private or State of Idaho lands having high public value. This document was sent to state and local governments and agencies, affected livestock operators, environmental groups, and various other interested parties for comment. The only adverse comments received were from a livestock grazing association that opposed a proposed land exchange with the State of Idaho. An analysis of these comments was made and a response was sent to the association. The analysis indicated that there was no reason to modify the proposed action identified in the land use plan amendment/environmental assessment.

Copies of the Proposed Burley District Land Use Plan

Amendment/Environmental Assessment are available at the Deep Creek Resource Area Office in Malad, Idaho and at the Burley District Office in Burley, Idaho. In accordance with 43 CFR 1610.5-2, any person who participated in the amendment process and has an interest which is or may be adversely affected by the approval of the amendment is allowed a 30 day period in which to protest the decision to amend the four land use plans identified above. Any protest must be filed within 30 days of the publication of this notice and sent to the following address: Director (760), Bureau of Land

Management, 1849 C Street NW., Washington, DC 20240. The protest shall contain:

1. The name, mailing address, telephone number, and interest of the person filing the protest
2. A statement of the issue or issues being protested
3. A statement of the part or parts of the amendment being protested
4. A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issues were discussed for the record
5. A concise statement explaining why the decision is believed to be wrong

FOR FURTHER INFORMATION CONTACT:
Karl Simonson, Burley District Realty Specialist, Burley District Office, Route 3, Box 1, Burley, Idaho 83318. Phone: (208) 678-5514.

Dated: July 8, 1991.

Gerald L. Quinn,
District Manager.

[FR Doc. 91-16938 Filed 7-16-91; 8:45 am]

BILLING CODE 4310-GG-M

[**UT-942-01-5700-11; UTU-65872**]

**Realty Action; Noncompetitive (Direct)
 Sale of Public Land in Grand County,
 UT**

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of realty action, UTU-65872, noncompetitive (direct) sale of public land in Grand County, Utah.

SUMMARY: Notice is given that the following described parcel of public land has been examined, and through the development of local land-use planning decisions based upon public input, resource considerations, regulations, and Bureau policies has been found suitable for disposal by sale pursuant to section 203 of the Federal Land Policy and Management Act of 1976 (FLPMA) (90 Stat. 2750; 43 U.S.C. 1713) using noncompetitive (direct) sale procedures (43 CFR 2711.3-3):

Salt Lake Meridian, Utah

T. 21 S., R. 18 E.,
Sec. 12, S½SE¼;
Sec. 13, NE¼NE¼.

The described land aggregates 120.00 acres.

The land is being offered as a noncompetitive (direct) sale to Green River City, Utah, in accordance with 43 CFR 2711.3-3. The land will not be offered for sale until at least sixty (60) days after publication of this notice in the **Federal Register**. The sale will be at

no less than the appraised fair market value of \$39,000.00.

The sale involves a parcel of land which is difficult and uneconomical to manage as public land and is not suitable for management by another Federal department or agency. This parcel of land was identified in planning for economical development and community expansion.

Publication of this notice in the **Federal Register** segregates the public land from the operation of the public land laws and the mining laws. The segregative effect will end upon issuance of a patent, or two hundred seventy (270) days from the date of the publication, whichever occurs first.

The terms and conditions applicable to the sale are:

1. All minerals, including oil and gas, shall be reserved to the United States, together with the right to prospect for, mine, and remove the minerals.

2. A right-of-way will be reserved for ditches and canals constructed by the authority of the United States (Act of August 30, 1890, 26 Stat. 391; 43 U.S.C. 945).

3. The sale of the land will be subject to all valid existing rights, reservations, and privileges of record. Existing rights, reservations, and privileges of record include, but are not limited to, Federal oil and gas lease UTU-57845 and the grazing use of Earline Nelson, holder of Grazing Authorization No. 6338. The rights of Earline Nelson to graze domestic livestock on the real estate according to the conditions and terms of Grazing Authorization No. 6338 shall cease on August 12, 1992. The City of Green River would be entitled to receive annual grazing fees from Earline Nelson in an amount not to exceed that which would be authorized under the Federal Grazing Fee published annually in the **Federal Register**.

Sale Procedures: The buyer will be required to submit ten (10) percent of the fair market value of the property on the date the property is offered for sale. The remainder of the full purchase price shall be submitted prior to the expiration of one hundred eighty (180) days from the date of the sale. The land will be offered for sale at 10 a.m., m.d.t. on September 20, 1991 at the Grand Resource Area office. If the lands are not sold on the sale date, they will remain for sale over the counter until sold or withdrawn from the market. Over-the-counter bidder qualifications are noted below.

Bidder Qualifications: Bidders must be U.S. citizens, 18 years of age or more; a State or State instrumentality authorized to hold property a corporation

authorized to hold property; or a corporation authorized to own real estate in the State of Utah.

Bid Standards: The BLM reserves the right to accept or reject any and all offers or withdraw the land from sale if, in the opinion of the Authorized Officer, consummation of the sale would not be fully consistent with section 203(g) of FLPMA or other applicable laws.

Comments: For a period of forty-five (45) days from the date of publication of this notice in the *Federal Register*, interested parties may submit comments to the Moab District Manager, Bureau of Land Management, P.O. Box 970, Moab, Utah 84532. Objections will be reviewed by the Utah State Director who may sustain, vacate, or modify this realty action. In the absence of any objections, this realty action will become the final determination of the Department of the Interior.

SUPPLEMENTARY INFORMATION:

Additional information concerning the lands and the terms and conditions of the sale may be obtained from Lindell Greer, Area Realty Specialist, Grand Resource Area, 885 South Sand Flats Road, Moab, Utah 84532 (801) 259-8193, or from Brad Groesbeck, District Realty Specialist, Moab District Office, 82 East Dogwood, P.O. Box 970, Moab, Utah 84532 (801) 259-6111.

Dated: July 10, 1991.

Kenneth V. Rhea,
Acting District Manager.

[FR Doc. 91-17023 Filed 7-18-91; 8:45 am]

BILLING CODE 4310-DQ-M

[UT-942-01-5700-11; UTU-66951]

Realty Action; Noncompetitive (Direct) Sale of Public Land in Carbon County, UT

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of realty action, UTU-66951, noncompetitive (direct) sale of public land in Carbon County, Utah.

SUMMARY: Notice is given that the following described parcel of public land has been examined, and through the development of local land-use planning decisions based upon public input, resource considerations, regulations, and Bureau policies has been found suitable for disposal by sale pursuant to section 203 of the Federal Land Policy and Management Act of 1976 (FLPMA) (90 Stat. 2750; 43 U.S.C. 1713) using noncompetitive (direct) sale procedures (43 CFR 2711.3-3):

Salt Lake Meridian, Utah
T. 15 S., R. 13 E.

Sec. 9, NW 1/4 NE 1/4

The described land aggregates 40.00 acres.

The land is being offered as a noncompetitive (direct) sale to Mr. Paul B. Martinez of Price, Utah in accordance with 43 CFR 2711.3-3. The land will not be offered for sale until at least sixty (60) days after publication of this notice in the *Federal Register*. The sale will be at no less than the appraised fair market value of \$5,000.00.

The sale involves a parcel of land which is difficult and uneconomical to manage as public land and is not suitable for management by another Federal department or agency. This parcel of land was identified in planning for disposal.

Publication of this notice in the *Federal Register* segregates the public land from the operation of the public land laws and the mining laws. The segregative effect will end upon issuance of a patent, or two hundred seventy (270) days from the date of the publication, whichever occurs first.

The terms and conditions applicable to the sale are:

1. All minerals, including oil and gas, shall be reserved to the United States, together with the right to prospect for, mine, and remove the minerals.

2. A right-of-way will be reserved for ditches and canals constructed by the authority of the United States (Act of August 30, 1890, 26 Stat. 391; 43 U.S.C. 945).

3. The sale of the land will be subject to all valid existing rights, reservations, and privileges of record. Existing rights, reservations, and privileges of record include, but are not limited to, Federal oil and gas lease UTU-61316.

Sale Procedures: The buyer will be required to submit ten (10) percent of the fair market value of the property on the date the property is offered for sale. The remainder of the full purchase price shall be submitted prior to the expiration of one hundred eighty (180) days from the date of the sale. The land will be offered for sale at 10 a.m. m.d.t. on September 20, 1991 at the Price River Resource Area office. If the lands are not sold on the sale date, they will remain for sale over the counter until sold or withdrawn from the market. Over-the-counter bidder qualifications are noted below.

Bidder Qualifications: Bidders must be U.S. citizens, 18 years of age or more; a State or State instrumentality authorized to hold property; a corporation authorized to hold property; or a corporation authorized to own real estate in the State of Utah.

Bid Standards: The BLM reserves the right to accept or reject any and all

offers or withdraw the land from sale if in the opinion of the Authorized Officer consummation of the sale would not be fully consistent with section 203(g) of FLPMA or other applicable laws.

Comments: For a period of forty-five (45) days from the date of publication of this notice in the *Federal Register*, interested parties may submit comment to the Moab District Manager, Bureau of Land Management, P.O. Box 970, Moab, Utah 84532. Objections will be reviewed by the Utah State Director who may sustain, vacate, or modify this realty action. In the absence of any objections this realty action will become the final determination of the Department of the Interior.

SUPPLEMENTARY INFORMATION:

Additional information concerning the lands and the terms and conditions of the sale may be obtained from Mark Mackiewicz, Area Realty Specialist, Price River Resource Area, 900 North 700 East, Price, Utah 84501 (801) 637-4584, or from Brad Groesbeck, District Realty Specialist, Moab District Office, 82 East Dogwood, P.O. Box 970, Moab, Utah 84532 (801) 259-6111.

Dated: July 10, 1991.

Kenneth V. Rhea,
Acting District Manager.

[FR Doc. 91-17025 Filed 7-18-91; 8:45 am]

BILLING CODE 4310-DQ-M

Minerals Management Service

North Carolina Environmental Sciences Review Panel; Notice and Agenda for Meetings

This notice is issued in accordance with the provisions of the Federal Advisory Committee Act, Public Law No. 92-463, 5 U.S.C. Appendix 1, and the Office of Management and Budget's Circular No. A-63, Revised. The North Carolina Environmental Sciences Review Panel will meet from 8:30 a.m. to 5 p.m. on Monday, August 5, and from 8:30 a.m. to 3 p.m. on Tuesday, August 6, 1991, at the Carriage House, Woods Hole Oceanographic Institute, Woods Hole, Massachusetts. The Agenda will include the following:

Review of Draft Report

- a. Introduction
- b. Characterization of Environment
- c. Adequacy of Information for Leasing Phase
- d. Adequacy of Information for Exploration and Delineation
- e. Adequacy of Information for Development and Production
- f. Adequacy of Information for Post-Production Phase

Initial Discussion of Conclusions and Recommendations

The Panel will also meet from 10 a.m. to 5:30 p.m. on Tuesday, August 27, and from 8:30 a.m. to 3 p.m. on Wednesday, August 28, 1991, at the Best Western Armada at Mile Post 17, Nags Head, North Carolina. The agenda will include the following:

Review of Revised Draft Report

- a. Introduction
- b. Characterization of Environment
- c. Adequacy of Information for Leasing Phase
- d. Adequacy of Information for Exploration and Delineation
- e. Adequacy of Information for Development and Production
- f. Adequacy of Information for Post-Production Phase

Review of Proposed Conclusions and Recommendations

The meeting is open to the public. Upon request, interested parties may make oral or written presentations related to the purpose of the panel. Requests should be made to Dr. Andrew Robertson, Federal Coordinator, 301-443-8933.

Dated: July 11, 1991.

Thomas Gernhofer,

Associate Director for Offshore Minerals Management.

[FR Doc. 91-17048 Filed 7-16-91; 8:45 am]

BILLING CODE 4310-MR-M

INTERNATIONAL TRADE COMMISSION

[Investigation No. 337-TA-324]

Certain Acid-Washed Denim Garments and Accessories; Decision not to Review an Initial Determination Amending the Complaint and Notice of Investigation to Add Six Firms as Respondents and Designating the Investigation "More Complicated"

AGENCY: International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Commission has determined not to review the presiding administrative law judge's (ALJ's) initial determination (ID) (Order No. 10) in the above-captioned investigation granting: (1) A motion by complainants Greater Texas Finishing Corporation and Golden Trade S.R.L. to amend the complaint and notice of investigation to add six firms as respondents; and (2) a motion by respondents Jordache Enterprises, Inc., Gitano Group, Inc., and Rio Sportswear,

Inc. to declare the investigation "more complicated" and extend the deadline for its conclusion by four months. In light of this action, the deadline for completion of the investigation is June 8, 1992.

FOR FURTHER INFORMATION CONTACT:

William T. Kane, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, SW., Washington, DC 20436; telephone: (202)-252-1116. Copies of the ID and all other nonconfidential documents filed in connection with this investigation are available for inspection during official business hours (8:45 a.m. to 5:45 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E. Street, SW., Washington, DC 20436; telephone: (202)-252-1000. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting the Commission's TDD terminal at (202)-252-1810.

SUPPLEMENTARY INFORMATION: The Commission voted to institute this investigation on January 28, 1991. The notice of investigation was published in the *Federal Register* on February 6, 1991 (56 FR 4851). The complaint alleges a violation of section 337 in the importation, sale for importation, or sale after importation of certain acid-washed denim garments and accessories by reason of infringement of claims 6 and 14 of U.S. Letters Patent 4,740,213.

On May 17, 1991, complainants moved (Motion Docket No. 324-14) pursuant to Commission interim rule 210.22(a) to amend the complaint and notice of investigation to add six firms as respondents. These six firms are: (1) Fast Forward Limited; (2) Four Ninety Eight Limited; (3) Jordache International (Hong Kong); (4) Blooming Dyeing Laundry Co., Ltd; (5) Bloowah Dyeing & Laundry Co.; and (6) Wearbest Garment Mfg. Co., Ltd. On May 31, 1991, respondents The Gitano Group, Inc., Rio Sportswear, Inc., and Jordache Enterprises, Inc., moved jointly (Motion Docket No. 324-16) for an order declaring the investigation "more complicated" and extending the deadline for completion of the investigation by four months. Complainants filed a response in support of respondents' motion. The Commission investigative attorneys filed submissions in support of both motions. On June 10, 1991, the presiding ALJ issued an ID granting both motions. The ID based the designation of the investigation as "more complicated" on the fact that the remaining discovery is likely to be both voluminous and difficult, given the number of

respondents and the fact that many of the firms are located overseas. No petitions for review or agency comments were received.

This action is taken pursuant to section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337), and Commission interim rules 210.53 and 210.59 (19 CFR 210.53 and 210.59, as amended).

Issued: July 8, 1991.

By order of the Commission.

Kenneth R. Mason,
Secretary.

[FR Doc. 91-17016 Filed 7-16-91; 8:45 am]
BILLING CODE 7020-02-M

[Investigations Nos. 731-TA-520 and 521 (Preliminary)]

Certain Carbon Steel Butt-Weld Pipe Fittings From China and Thailand

Determinations

On the basis of the record ¹ developed in the subject investigations, the Commission determines, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of imports from China and Thailand of certain carbon steel butt-weld pipe fittings,² provided for in subheading 7307.93.30 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value (LTFV).

Background

On May 22, 1991, a petition was filed with the Commission and the Department of Commerce by the U.S. Fittings Group, alleging that an industry in the United States is materially injured by reason of LTFV imports of certain carbon steel butt-weld pipe fittings from

¹ The record is defined in section 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(f)).

² For purposes of these investigations, certain carbon steel butt-weld pipe fittings are defined as carbon steel butt-weld pipe fittings having an inside diameter of less than 360 millimeters (14 inches), imported in either finished or unfinished form. These formed or forged fittings are used to join sections in piping systems where conditions require permanent, welded connections, as distinguished from fittings based on other fastening methods (e.g., threaded, grooved, or bolted fittings). Carbon steel butt-weld pipe fittings are classified in subheading 7307.93.30 of the Harmonized Tariff Schedule of the United States (HTS). Unfinished butt-weld pipe fittings of subheading 7307.99 that are not machined, not tooled, and not otherwise processed after forging are not included in the scope of the investigations.

China and Thailand. Accordingly, effective May 22, 1991, the Commission instituted antidumping investigations Nos. 731-TA-520 and 521 (Preliminary).

Notice of the institutions of the Commission's investigations and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register of May 30, 1991 (56 FR 24410). The conference was held in Washington, DC, on June 12, 1991, and all persons who requested the opportunity were permitted to appear in person or by counsel.

The Commission transmitted its determinations in these investigations to the Secretary of Commerce on July 8, 1991. The views of the Commission are contained in USITC Publication 2401 (July 1991), entitled "Certain Carbon Steel Butt-Weld Pipe Fittings from China and Thailand: Determinations of the Commission in Investigations Nos. 731-TA-520 and 521 (Preliminary) Under the Tariff Act of 1930, Together With the Information Obtained in the Investigations."

Issued: July 9, 1991.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 91-17019 Filed 7-16-91; 8:45 am]

BILLING CODE 7020-02-M

[Investigations Nos. 731-TA-487, 488, 489, 490, and 494 (Final)]

Coated Groundwood Paper From Belgium, Finland, France, Germany, and The United Kingdom; Institution and Scheduling of Final Antidumping Investigations

AGENCY: United States International Trade Commission.

ACTION: Institution and scheduling of final antidumping investigations.

SUMMARY: The Commission hereby gives notice of the institution of final antidumping investigation Nos. 731-TA-487, 488, 489, 490, and 494 (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) (the act) to determine whether an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Belgium, Finland, France, Germany, and the United Kingdom of coated groundwood paper, provided for in subheadings 4810.21.00

and 4810.29.00 of the Harmonized Tariff Schedule of the United States.

For further information concerning the conduct of these investigations, hearing procedures, and rules of general application, consult the Commission's Rules of Practice and Procedure, part 201, subparts A through E (19 CFR part 201, as amended by 56 FR 11918, Mar. 21, 1991), and part 207, subparts A and C (19 CFR part 207, as amended by 56 FR 11918, Mar. 21, 1991).

EFFECTIVE DATE: June 13, 1991.

FOR FURTHER INFORMATION CONTACT: Larry Reavis (202-252-1185), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202-252-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-252-1000.

SUPPLEMENTARY INFORMATION:

Background.—These investigations are being instituted as a result of an affirmative preliminary determination by the Department of Commerce that imports of coated groundwood paper from the above countries are being sold in the United States at less than fair value within the meaning of section 733 of the act (19 U.S.C. 1673b). The investigations were requested in a petition filed on December 28, 1990, by the Committee of the American Paper Institute to Safeguard the U.S. Coated Groundwood Paper Industry, New York, NY, and each of its individual members.

Participation in the investigations and public service list.—Persons wishing to participate in the investigations as parties must file an entry of appearance with the Secretary to the Commission, as provided in section 201.11 of the Commission's rules, not later than twenty-one (21) days after publication of this notice in the Federal Register. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to these investigations upon the expiration of the period for filing entries of appearance.

Limited disclosure of business proprietary information (BPI) under an administrative protective order (APO) and BPI service list.—Pursuant to § 207.7(a) of the Commission's rules, the Secretary will make BPI gathered in these final investigations available to authorized applicants under the APO issued in the investigations, provided that the application is made not later than twenty-one (21) days after the

publication of this notice in the Federal Register. A separate service list will be maintained by the Secretary for those parties authorized to receive BPI under the APO.

Staff report.—The prehearing staff report in these investigations will be placed in the nonpublic record on October 11, 1991, and a public version will be issued thereafter, pursuant to § 207.21 of the Commission's rules.

Hearing.—The Commission will hold a hearing in connection with these investigations beginning at 9:30 a.m. on October 30, 1991, at the U.S. International Trade Commission Building. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission on or before October 23, 1991. A nonparty who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the hearing. All parties and nonparties desiring to appear at the hearing and make oral presentations should attend a prehearing conference to be held at 9:30 a.m. on October 22, 1991, at the U.S. International Trade Commission Building. Oral testimony and written materials to be submitted at the public hearing are governed by §§ 201.6(b)(2), 201.13(f), and 207.23(b) of the Commission's rules.

Written submissions.—Each party is encouraged to submit a prehearing brief to the Commission. Prehearing briefs must conform with the provisions of § 207.22 of the Commission's rules; the deadline for filing is October 22, 1991. Parties may also file written testimony in connection with their presentation at the hearing, as provided in § 207.23(b) of the Commission's rules, and posthearing briefs, which must conform with the provisions of § 207.24 of the Commission's rules. The deadline for filing posthearing briefs is November 8, 1991; witness testimony must be filed no later than three (3) days before the hearing. In addition, any person who has not entered an appearance as a party to the investigations may submit a written statement of information pertinent to the subject of the investigations on or before November 8, 1991. All written submissions must conform with the provisions of § 201.8 of the Commission's rules; any submissions that contain BPI must also conform with the requirements of §§ 201.6, 207.3, and 207.7 of the Commission's rules.

In accordance with § 201.16(c) and 207.3 of the rules, each document filed by a party to the investigations must be served on all other parties to the investigations (as identified by either the public or BPI service list), and a

certificate of service must be timely filed. The Secretary will not accept a document for filing without a certificate of service.

Authority: These investigations are being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.20 of the Commission's rules.

By order of the Commission.

Issued: July 8, 1991.

Kenneth R. Mason,
Secretary.

[FR Doc. 91-17021 Filed 7-16-91; 8:45 am]

BILLING CODE 7020-02-M

[Investigations Nos. 303-TA-21
(Preliminary) and 731-TA-519 (Preliminary)]

Gray Portland Cement and Cement Clinker From Venezuela; Import Investigation

Determinations

On the basis of the record¹ developed in the subject investigations, the Commission determines, pursuant to sections 303 and 733(a) of the Tariff Act of 1930 (19 U.S.C. 1303 and 1873b(a)) (the act), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports from Venezuela of gray portland cement and cement clinker, provided for in subheadings 2523.29.00, 2523.90.00, and 2523.10.00 of the Harmonized Tariff Schedule of the United States, that are alleged to be subsidized by the Government of Venezuela and sold in the United States at less than fair value (LTFV).

Background

On May 21, 1991, a petition was filed with the Commission and the Department of Commerce by counsel for the Ad Hoc Committee of Florida Producers, Washington, DC, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized and LTFV imports of gray portland cement and cement clinker from Venezuela. Accordingly, effective May 21, 1991, the Commission instituted countervailing duty investigation No. 303-TA-21 (Preliminary) and antidumping investigation No. 731-TA-519 (Preliminary).

Notice of the institution of the Commission's investigations and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office

of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register of May 29, 1991, (56 FR 24202). The conference was held in Washington, DC, on June 11, 1991, and all persons who requested the opportunity were permitted to appear in person or by counsel.

The Commission transmitted its determinations in these investigations to the Secretary of Commerce on July 5, 1991. The views of the Commission are contained in USITC Publication 2440 (July 1991), entitled "Gray Portland Cement and Cement Clinker From Venezuela: Determinations of the Commission in Investigations Nos. 303-TA-21 and 731-TA-519 (Preliminary) Under the Tariff Act of 1930. Together With the Information Obtained in the Investigation."

Issued: July 8, 1991.

By order of the Commission.

Kenneth R. Mason,
Secretary.

[FR Doc. 91-17020 Filed 7-16-91; 8:45 am]

BILLING CODE 7020-02-M

[Investigation No. 337-TA-323]

Certain Monoclonal Antibodies Used For Therapeutically Treating Humans Having Gram Negative Bacterial Infections; Notice of Change of Commission Investigative Attorney

Notice is hereby given that, as of this date, James M. Gould, Esq., of the Office of Unfair Import Investigations is designated as the Commission investigative attorney in the above-cited investigation instead of James M. Gould, Esq. and John R. Kroeger, Esq.

The Secretary is requested to publish this Notice in the Federal Register.

Dated: July 10, 1991.

Respectfully submitted,
Lynn I. Levine,
Director, Office of Unfair Import Investigations.

[FR Doc. 91-17017 Filed 7-16-91; 8:45 am]

BILLING CODE 7020-02-M

[Investigations Nos. 701-TA-305 (Final) and 731-TA-476 and 478-482 (Final)]

Steel Wire Rope From Argentina, India, Mexico, the People's Republic of China, Taiwan and Thailand; Closure of a Portion of a Commission Hearing to the Public

AGENCY: U.S. International Trade Commission.

ACTION: Closure of a portion of a Commission hearing to the public.

SUMMARY: Upon request of petitioner in the above-captioned final investigations, the Commission has unanimously determined to conduct a portion of its hearing scheduled for July 9, 1991, *in camera*. See Commission rules 201.13 and 201.35(b)(3) (19 CFR 201.13 and 201.35(b)(3)). The remainder of the hearing will be open to the public.

FOR FURTHER INFORMATION CONTACT: Andrea C. Casson, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, SW., Washington, DC 20436, telephone (202) 252-1105. Hearing impaired individuals are advised that information on this matter may be obtained by contacting the Commission's TDD terminal on (202) 252-1810.

SUPPLEMENTARY INFORMATION: The Commission believes that unusual circumstances are present in these investigations so as to make it appropriate to hold a portion of the hearing *in camera*. In light of the desirability of affording a full discussion at the hearing of business proprietary information (BPI) concerning (1) the purchase of the assets of one particular domestic producer by another domestic producer; (2) particular pricing of one producer; and (3) management-labor negotiations on wage and benefit reductions, the Commission has determined to reserve 15 minutes of the time allotted for petitioner's presentation to the discussion of these matters. In making this decision, the Commission nevertheless reaffirms its belief that, whenever possible, its business should be conducted in public.

Petitioner's *in camera* presentation will be limited to a discussion of the specific BPI mentioned above, followed by questions from the Commission as appropriate. Respondents, through their representatives who have been granted access to BPI under a Commission administrative protective order (APO) and are included on the Commission's APO service list in these investigations, will then have an opportunity to respond, and may also be questioned by the Commission as appropriate. For the *in camera* discussion, the room will be cleared of all persons except: (1) those who have been granted access to BPI under a Commission APO and are included on the Commission's APO service list in these investigations, and (2) persons who will be presenting *in camera* testimony on behalf of petitioner, and (3) personnel of the Commission. All those planning to

¹ The record is defined in § 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(f)).

attend the *in camera* portions of the hearing should be prepared to present proper identification.

Authority: The General Counsel has certified pursuant to Commission Rule 201.39 (19 CFR 201.39) that, in her opinion, a portion of the Commission's hearing in the above-captioned investigations may be closed to the public to prevent the disclosure of BPI.

Issued: July 9, 1991.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 91-17022 Filed 7-16-91; 8:45 am]

BILLING CODE 7020-02-M

[Investigation No. 332-135]

Annual Synthetic Organic Chemical (SOC) Report; Request for Comments

AGENCY: United States International Trade Commission.

ACTION: Request for comments on format of the annual SOC Report.

EFFECTIVE DATE: July 10, 1991.

FOR FURTHER INFORMATION CONTACT: James A. Emanuel or John J. Gersic, Energy and Chemicals Division, Office of Industries (telephone 202-205-3367 and 202-205-3342, respectively).

BACKGROUND: The Commission has collected and published production and sales data on synthetic organic chemicals since 1917. This program was formalized as investigation No. 332-135 effective February 1, 1982, initially under the authority of section 332(b) of the Tariff Act of 1930 (19 U.S.C. 1332(b)) and later (in May 1988) under the authority of section 332(g) (19 U.S.C. 1332(g)) at the request of the Subcommittee on Trade, Committee on Ways and Means, U.S. House of Representatives.

The Commission is reviewing the format of its annual report. In order to insure that the report continues to be as useful as practical to users but also to insure that the Commission's data gathering does not become unnecessarily burdensome to firms that are requested to furnish information, the Commission is soliciting comments from the public at large concerning:

1. Changes in format that would enhance the usefulness of the report to users; and

2. Means by which the Commission might simplify the data reporting requirements of chemical producers.

One change under consideration is to base the format on the Harmonized System (HS) nomenclature, which is the nomenclature used by the United States and most of its trading partners to record world trade. A change to such a format may be useful in view of (1) the

increasing importance of world trade to the United States economy, and (2) new trading arrangements and agreements, including the U.S.-Israel Free Trade Agreement, the U.S.-Canada Free Trade Agreement, the possible negotiation of a North American Free Trade Agreement (with Canada and Mexico), and possible elimination of additional trade barriers when the Uruguay Round of multilateral trade negotiations is completed. Use of the HS nomenclature format would also better enable users of the report to correlate U.S. production with U.S. imports and exports and to better compare U.S. data with U.N. data. It would also enhance the ability of the Commission to implement electronic reporting and data dissemination.

Materials are available which may be used to compare the data presented in the report Synthetic Organic Chemicals: United States Production and Sales, 1989, with the data that would be presented under the HS new format. Please call Kenneth Kozel (telephone 202-205-3360) to obtain a copy.

SUBMISSION OF COMMENTS: A signed original of each set of comments should be sent to James A. Emanuel, Energy and Chemical Division, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436, by November 15, 1991.

Hearing-impaired persons are advised that the information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

Issued: July 10, 1991.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 91-17018 Filed 7-16-91; 8:45 am]

BILLING CODE 7020-02-M

INTERSTATE COMMERCE COMMISSION

[Directed Service Order No. 1511]

Chicago Central & Pacific Railroad Company—Directed Service—Cedar Valley Railroad Company

AGENCY: Interstate Commerce Commission.

ACTION: Notice of modified hearing procedure.

SUMMARY: On June 5, 1991, pursuant to 49 U.S.C. 11125, the Commission authorized the Chicago Central & Pacific Railroad Company (CCP) to operate as a "Directed Rail Carrier" (DRC)—uncompensated and without Federal subsidy under 49 U.S.C. 11125(b)(5)—over the lines of the Cedar Valley

Railroad Company (CVR) between Albert Lea, MN and a connection with the CCP at Waterloo, IA, for a period of 60 days ending on August 3, 1991.

As a result of the upcoming expiration of Directed Service Order No. 1511 (DSO No. 1511), and in an effort to resolve questions regarding the propriety of certain actions by the DRC, it will be useful to receive comments from interested parties on whether cause exists to extend the order beyond the initial sixty (60) day period as provided by 49 U.S.C. 11125(b)(1), and on whether we should allow the DRC to cancel participation in joint line rates on grain movements previously in effect between CVR and SOO over Charles City, IA, which assertedly has the effect of altering preexisting traffic patterns.

DATES: This decision is effective on July 11, 1991. Comments in Directed Service Order No. 1511 shall be received by the close of business July 19, 1991. Replies shall be received by close of business July 26, 1991.

ADDRESSES: All submissions filed in this proceeding should refer to DSO No. 1511 and should be sent to the Commission's headquarters at 12th Street and Constitution Avenue, NW., Washington, DC 20423. An original and 10 copies should be submitted.

FOR FURTHER INFORMATION CONTACT:

Bernard Gaillard (202) 275-7849

or

Melvin F. Clemens, Jr. (202) 275-1559.

[TDD for hearing impaired: (202) 275-1721.]

SUPPLEMENTARY INFORMATION: The Cedar Valley Railroad Company (CVR), a 113 mile railroad system between Albert Lea, MN and a connection with the CCP at Waterloo, IA, was shut down by its management on May 22, 1991 due to a lack of operating funds. CVR connects with four rail carriers: (1) Charles City Rail Lines, Inc. at Charles City, IA (CCRY); (2) Chicago and North Western Transportation Company at Albert Lea and Glenville, MN (CNW); (3) Chicago Central & Pacific Railroad Company at Mona Junction and Waterloo, IA (CCP), and (4) Soo Line Railroad Company at Charles City, IA and Lyle, MN (SOO). The interchange between CVR and SOO at Charles City, IA was accomplished by CVR crews using SOO's mainline for a short distance to access SOO's interchange yard.

On June 5, 1991, pursuant to 49 U.S.C. 11125(b)(1) and an offer by CCP, the Commission authorized CCP to operate the lines of CVR as a "Directed Rail Carrier"—uncompensated and without Federal subsidy under 49 U.S.C.

11125(b)(5)", for a period of sixty (60) days ending on August 3, 1991. Under the same statutory authority, the Commission can extend directed service beyond the initial sixty (60) days for an additional period not to exceed 180 days.

On June 7, 1991, CCP notified the Commission that it had commenced directed service operations and, pursuant to the Terms and Conditions in DSO No. 1511, on June 10, 1991, further indicated the extent to which CVR assets and properties would be utilized in those operations. Subsequently, CCP has indicated its willingness to provide uncompensated directed service for up to an additional 180 days if we so desire.

On July 2, 1991, the SOO filed a letter with the Commission's Office of Compliance and Consumer Assistance (OCCA) concerning actions taken by the CCP, as DRC, to cancel its participation in certain joint line rates with the SOO over Charles City, IA. SOO alleges that this cancellation results in the diversion of a substantial volume of traffic away from SOO, and deprives shippers of certain service options and Iowa destinations served by SOO, such as McGregor, Linwood/Davenport, Buffalo, and Muscatine. SOO requests the Commission to order CCP to withdraw its cancellation notice and further requests the Commission to clarify its order with respect to the extent to which CCP may make changes to CVR tariffs under the Rates provision of the Terms and Conditions of DSO No. 1511, at page 7, paragraph 4.

As a result of the upcoming expiration of DSO No. 1511, and in an effort to resolve questions regarding the propriety of certain actions by the DRC, it will be useful to receive comments from interested parties on whether cause exists to extend DSO No. 1511 beyond the initial sixty (60) day period, and on whether we should allow the cancellation of participation in joint line rates on grain movements previously in effect between CVR and SOO over Charles City, IA, which assertedly has the effect of altering preexisting traffic patterns.

Comments

Pursuant to 49 U.S.C. 11125(b)(1) and if cause exists, the Commission can extend directed service beyond the initial sixty (60) day period for an additional period of up to 180 days. The Commission, by this order, is initiating a modified hearing procedure to consider extension and other aspects of the directed service order. Interested parties may use this procedure to comment on any matter pertinent to directed service. It is requested commenting parties focus

specifically on the following areas related to extension of the service order and its conditions.

Extension

1. Continued Service. Any carrier, including CCP, offering to continue directed rail service over lines of CVR on an uncompensated basis should give a full description of the scope and conditions of that proposed service, including any limitations.

2. Statutory Requirements. Whether cause exists to extend DSO No. 1511 as required by 49 U.S.C. 11125(b)(1)?

3. Time Period. If DSO No. 1511 is extended, should it be extended for the entire 180-day remaining time period allowed by statute or is a lesser amount of time more appropriate?

Tariff Changes

4. Terms and Conditions of DSO No. 1511. If the order is extended, should it be upon Terms and Conditions designed to preserve rates and routes as they existed prior to directed service, as requested by SOO?

5. Since the service order became effective, what is the volume of traffic that has moved between CVR and SOO over the Charles City interchange under Soo Line Tariff Number 4004, Item 1055?

Effect on Shippers

6. How will shippers and receivers located on the CVR line be affected by the cancellation of the joint rates with SOO over Charles City, and will shippers located on CVR actually lose access to destinations served by SOO, as SOO alleges?

Notice of this decision shall be given to the general public by publication in the ICC and **Federal Registers**. The decision will also be served on the Federal Railroad Administration, the Association of American Railroads, American Short Line Railroad Association, CVR, CCP, The National Bank of Waterloo, Iowa Department of Transportation, and all parties of record.

Decided: July 11, 1991.

By the Commission, Chairman Philbin, Vice Chairman Emmett, Commissioners Simmons, Phillips and McDonald. Commissioner Emmett did not participate in the disposition of this proceeding.

Sidney L. Strickland, Jr.,
Secretary.

[FR Doc. 91-17028 Filed 7-16-91; 8:45 am]

BILLING CODE 7035-01-M

[Docket No. AB-55 (Sub-No. 383X)]

CSX Transportation, Inc.—Abandonment Exemption—In Dade County, FL

AGENCY: Interstate Commerce Commission.

ACTION: Notice of exemption.

SUMMARY: The Commission exempts from the prior approval requirements of 49 U.S.C. 10903-10904, the abandonment by CSX Transportation, Inc., of 0.58 miles of rail line between mileposts SX-1039.92 and SX-1040.50 in Miami, Dade County, FL, subject to standard labor protective conditions.

DATES: Provided no formal expression of intent to file an offer of financial assistance has been received, this exemption will be effective on August 16, 1991. Formal expressions of intent to file an offer¹ of financial assistance under 49 CFR 1152.27(c)(2) must be filed by July 29, 1991, petitions to stay must be filed by August 5, 1991 and petitions for reconsideration must be filed by August 15, 1991. Requests for a public use condition must be filed by July 29, 1991.

ADDRESSES: Send pleadings referring to Docket No. AB-55 (Sub-No. 383X) to:

- (1) Office of the Secretary Case Control Branch Interstate Commerce Commission Washington, DC 20423.
- (2) Petitioner's representative: Charles M. Rosenberger CSX Transportation, Inc. 500 Water Street Jacksonville, FL 32202.

FOR FURTHER INFORMATION CONTACT: Joseph H. Dettmar, (202) 275-7245; (TDD for hearing impaired: (202) 275-1721).

SUPPLEMENTARY INFORMATION:

Additional information is contained in the Commission's decision. To purchase a copy of the full decision, write to, call, or pick up in person from: Dynamic Concepts, Inc., room 2229, Interstate Commerce Commission Building, Washington, DC 20423. Telephone: (202) 289-4357/4359. [Assistance for the hearing impaired is available through TDD service (202) 275-1721.]

Decided: July 10, 1991.

By the Commission, Chairman Philbin, Vice Chairman Emmett, Commissioners Simmons, Phillips, and McDonald.

Sidney L. Strickland, Jr.,
Secretary.

[FR Doc. 91-17027 Filed 7-16-91; 8:45 am]

BILLING CODE 7035-01-M

¹ See Exempt. of Rail Abandonment—Offers of Finan. Assist., 4 I.C.C.2d 164 (1987).

[Docket No. AB-3 (Sub-No. 94)]**Missouri Pacific Railroad Co.—
Abandonment—in Williamson County,
TX (Georgetown Branch); Findings**

The Commission has issued a certificate authorizing the Missouri Pacific Railroad Company to abandon and discontinue service over its Georgetown Branch between Granger (milepost 907.38) and Georgetown (milepost 923.70) in Williamson County, TX. The Commission has also imposed public use conditions under 49 CFR 1152.28(a)(2) for 180 days.

The abandonment certificate will become effective August 16, 1991 unless the Commission also finds that: (1) a financially responsible person has offered financial assistance (through subsidy or purchase) to enable the rail service to be continued; and (2) it is likely that the assistance would fully compensate the railroad.

Any financial assistance offer must be filed with the Commission and the applicant no later than 10 days from the publication of this Notice. The following notation shall be typed in bold face on the lower left-hand corner of the envelope containing the offer: "Rail Section, AB-OFA." Any offer previously made must be remade within this 10-day period.

Information and procedures regarding financial assistance for continued rail service are contained in 49 U.S.C. 10905 and 49 CFR 1152.

Decided: July 10, 1991.

By the Commission, Chairman Philbin, Vice Chairman Emmett, Commissioners Simmons, Phillips, and McDonald.

Sidney L. Strickland, Jr.,

Secretary.

[FR Doc. 91-17029 Filed 7-16-91; 8:45 am]

BILLING CODE 7035-01-M

[Finance Docket No. 31894]**Pioneer Railroad Co., Inc.;
Continuance in Control Exemption,
Fort Smith Railroad Co.; Exemption**

Pioneer Railroad Company, Inc. (Pioneer), a noncarrier, has filed a notice of exemption to continue to control Fort Smith Railroad Co. (FS) upon FS' becoming a carrier. FS has concurrently filed a notice of exemption in Finance Docket No. 31893, Fort Smith Railroad Co.—Lease And Operation Exemption—Missouri Pacific Railroad Company to lease and operate Missouri Pacific Railroad Company's 49.04 mile rail line between Paris and Fort Smith, AR.

Pioneer owns and controls the following Class III rail common carriers: West Jersey Railroad Co., and Wabash

& Grand River Railroad Co. It indicates that: (1) The properties operated by the named railroads will not connect with each other; (2) the continuance in control is not a part of a series of anticipated transactions that would connect the railroads with each other or any railroad in their corporate family; (3) the transaction does not involve a Class I carrier. The transaction therefore is exempt from the prior approval requirements of 49 U.S.C. 11343. See 49 CFR 1180.2(d)(2).

As a condition to use of this exemption, any employee affected by the transaction will be protected by the conditions set forth in *New York Dock Ry.—Control—Brooklyn Eastern Dist.*, 360 I.C.C. 60 (1979).

Petitions to revoke the exemption under 49 U.S.C. 10505(d) may be filed at any time. The filing of a petition to revoke will not automatically stay the transaction. Pleadings must be filed with the Commission and served on: John D. Heffner, Gerst, Heffner, Carpenter & Podgorsky, 1700 K Street, NW., suite 1107, Washington, DC 20006.

Decided: July 3, 1991.

By the Commission, David M. Konschnik, Director, Office of Proceedings.

Sidney L. Strickland, Jr.,

Secretary.

[FR Doc. 91-17026 Filed 7-16-91; 8:45 am]

BILLING CODE 7035-01-M

DEPARTMENT OF JUSTICE**Lodging of Consent Decree Pursuant
to the Comprehensive Environmental
Response, Compensation and Liability
Act**

In accordance with Departmental policy, 28 CFR 50.7, notice is hereby given that on July 3, 1991, a proposed Consent Decree in *United States v. Acton Corp. et al.*, No. 91-2873, was lodged with the United States District Court for the District of New Jersey.

The complaint in this action, filed concurrently with the Decree, is brought pursuant to sections 106 and 107(a) of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. 9606 and 9607(a). The complaint seeks an order requiring the defendants to implement the remedy set forth in the September 28, 1990 Record of Decision ("ROD") for the Second Operable Unit at the Lone Pine Landfill Superfund Site ("Site") located in Freehold Township, Monmouth County, New Jersey. (The remedy set forth in the ROD for the Second Operable Unit calls for, *inter alia*, the treatment of contaminated off-site groundwater.) The complaint also

seeks to recover costs incurred by the Environmental Protection Agency ("EPA") in taking response actions at the Site in connection with the Second Operable Unit, as well as a declaratory judgment that the defendants are liable for response costs to be incurred by EPA in the future in connection with the Second Operable Unit.

The proposed Consent Decree embodies an agreement by approximately 120 potentially responsible parties at the Site to implement the ROD for the Second Operable Unit. The settlers have also agreed, *inter alia*, to pay the United States \$561,267.59 in reimbursement of past response costs incurred by EPA in connection with the Second Operable Unit, and to reimburse the United States for all future response costs that are incurred in connection with the Second Operable Unit.

The Department of Justice will receive for a period of thirty (30) days from the date of this publication comments relating to the proposed Consent Decree. Comments should be addressed to the Assistant Attorney General of the Environment and Natural Resources Division, Department of Justice, Washington, DC 20530, and should refer to *United States v. Acton Corp. et al.* DOJ No. 90-11-2-294B.

The proposed Consent Decree may be examined at the region II Office of the Environmental Protection Agency, 26 Federal Plaza, New York, New York, 10278, and at the Environmental Enforcement Section Document Center, 601 Pennsylvania Avenue Building NW., Washington, DC 20004 (202-347-2072).

A copy of the proposed Consent Decree may be obtained in person or by mail from the Environmental Enforcement Section Document Center, 601 Pennsylvania Avenue Building NW., Box 1097, Washington, DC 20004. In requesting a copy, please refer to the referenced case and enclose a check in the amount of \$80.75 (25 cents per page reproduction cost) for the entire Consent Decree, or a check in the amount of \$20.25 for a copy of the Consent Decree without the signature pages and the attachments.

Richard B. Stewart,

Assistant Attorney General, Environment and Natural Resources Division.

[FR Doc. 91-16940 Filed 7-16-91; 8:45 am]

BILLING CODE 4410-01-M

Lodging of Settlement Agreements

In accordance with the policy of the Department of Justice, 28 CFR 50.7, and pursuant to section 122(d)(2) of the

Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. 9622(d)(2), notice is hereby given that two Consent Decrees were lodged with the United States District Court of the Eastern District of Kentucky on June 20, 1991. This action was brought pursuant to section 107 CERCLA, 42 U.S.C. 9607.

Under one Consent Decree, 34 responsible parties agree to pay \$821,550 to the Hazardous Substance Superfund. This amount is approximately 50% of costs incurred by the United States in responding to a release of hazardous substances at the Custom Industrial Disposal Site (the "Site") in Shelby County, Kentucky.

Under the other Consent Decree, three responsible parties agree to pay \$223,481 to the Hazardous Substance Superfund. This amount is approximately 14% of costs incurred by the United States in responding to a release of hazardous substances at the Site. The signatories to this Consent Decree also agree to complete the removal action at part of the Site and to reimburse the United States for overseeing their removal work.

In addition, to these Consent Decrees, the United States is separately lodging an Administrative Order of Consent. Under the Administrative Order of Consent, 199 *de minimis* responsible parties agree to pay \$418,945 to the Hazardous Substances Superfund. Through these two Settlement Agreements, the United States will recover approximately 90% of the costs it incurred in responding to a release of hazardous substances at the Site. Except for oversight of removal work being conducted by three responsible parties, the United States does not anticipate the necessity for further response actions at the Site.

The Department of Justice will receive comments relating to the proposed Settlement Agreements for a period of 30 days from the date of this publication. Comments should be addressed to the Assistant Attorney General of the Environment and Natural Resources Division, Department of Justice, 10th and Pennsylvania Avenue, NW., Washington, DC 20530. All comments should refer to *United States v. Alcan Foil Products, Division of Alcan Aluminum Corporation*, D.J. Ref. 90-11-2-547.

The proposed Settlement Agreements may be examined at the office of the United States Attorney, First Federal Building, 110 West Vine Street, Lexington, Kentucky 40591. A copy of the proposed Settlement Agreements may also be examined at the Environmental Enforcement Section,

Document Center, 601 Pennsylvania Avenue Building, NW., Washington, DC 20044 (202-347-2072). A copy of the proposed Settlement Agreements may be obtained in person or by mail from the Environmental Enforcement Document Center, 601 Pennsylvania Avenue, NW., Box 1097, Washington, DC 20004. Any request for a copy of the proposed Settlement Agreements should be accomplished by a check in the amount of \$12.25 for copying costs (\$0.25 per page) payable to "Consent Decree Library".

Richard B. Stewart,
Assistant Attorney General, Environment and Natural Resources Division.

[FR Doc. 91-16941 Filed 7-16-91; 8:45 am]

BILLING CODE 4410-01-M

Petro-Canada Inc. 14 PCCE, 111-5 Avenue SW., Calgary, Alberta, T2P 3E3 Canada
Heritage Remediation/Engineering, Inc., 1175 Western Drive, Indianapolis, Indiana 46241

The nature and objective of the research program performed in accordance with Project No. 89-09 is to develop a "Spent Caustic Management" document containing the results of an industry caustic use survey, spend caustic minimization and management alternatives, and future expectations of commercial caustic recovery operations. Information regarding participation in this project may be obtained by contacting the Contract Coordinator, Dr. Carole L. Engelder, Amoco Oil Company, P.O. Box 401, Texas City, Texas 77592.

Joseph H. Widmar,
Director of Operations, Antitrust Division.
[FR Doc. 91-16942 Filed 7-16-91; 8:45 am]

BILLING CODE 4410-01-M

U.S. DEPARTMENT OF JUSTICE

Antitrust Division

Notice Pursuant to the National Cooperative Research Act of 1984—Petroleum Environmental Research Forum

Notice is hereby given that, on June 17, 1991, pursuant to section 6(a) of the National Cooperative Research Act of 1984, 15 U.S.C. 4301, *et seq.* ("the Act"), the participants in the Petroleum Environmental Research Forum ("PERF") Project No. 89-09, filed written notifications simultaneously with the Attorney General and with the Federal Trade Commission disclosing (1) the identities of the parties to the project and (2) the nature and objective of the research program to be performed in accordance with said project. The notifications were filed for the purpose of invoking the Act's provisions limiting the recovery of antitrust plaintiffs to actual damages under specified circumstances. Pursuant to section 6(b) of the Act, the identities of the parties participating in Project No. 89-09, together with the nature and objectives of the research program, are given below.

The current parties to PERF Project No. 89-09 identified by this notice are:
Amoco Oil Company, 2401 Fifth Avenue, Texas City, Texas 77590
BP America Inc., 4440 Warrensville Center Road, Cleveland, Ohio 44128
Exxon Research and Engineering Company, 180 Park Avenue, Florham Park, New Jersey 07932
Marathon Oil Company, 7400 S. Broadway, Littleton, Colorado 80122
Murphy Oil USA, Inc., 200 Peach Street, El Dorado, Arkansas 71730

DEPARTMENT OF LABOR

Employment and Training Administration

Labor Surplus Area Classifications Under Executive Orders 12073 and 10582; Additions to the Annual List of Labor Surplus Areas

AGENCY: Employment and Training Administration, Labor.

ACTION: Notice.

SUMMARY: The purpose of this notice is to announce additions to the annual list of labor surplus areas.

DATE: These additions to the annual list of labor surplus areas are effective July 1, 1991.

FOR FURTHER INFORMATION CONTACT: William J. McGarrity, Labor Economist, Employment and Training Administration, 200 Constitution Avenue NW., room N-4470, Attention: TEES, Washington, DC 20210. Telephone: 202-535-0189.

SUPPLEMENTARY INFORMATION: Executive Order 12073 requires executive agencies to emphasize procurement set-asides in labor surplus areas. The Secretary of Labor is responsible under that Order for classifying and designating areas as labor surplus areas. Executive agencies should refer to Federal Acquisition Regulation part 20 (48 CFR part 20) in order to assess the impact of the labor surplus area program on particular procurement.

Under Executive Order 10582 executive agencies may reject bids or offers of foreign materials in favor of the lowest offer by a domestic supplier, provided that the domestic supplier undertakes to produce substantially all of the materials in areas of substantial unemployment as defined by the Secretary of Labor. The preference given to domestic suppliers under Executive Order 10582 has been modified by Executive Order 12260. Federal Acquisition Regulation part 25 (48 CFR part 25) implements Executive Order 12260. Executive agencies should refer to Federal Acquisition Regulation part 25 in procurements involving foreign businesses or products in order to assess its impact on the particular procurements.

The Department of Labor regulations implementing Executive Orders 12073 and 10582 are set forth at 20 CFR part 654, subparts A and B. Subpart A requires the Assistant Secretary of Labor to classify jurisdictions as labor surplus areas pursuant to the criteria specified in the regulations and to publish annually a list of labor surplus areas. Pursuant to those regulations the Assistant Secretary of Labor published the annual list of labor surplus areas on October 19, 1990, [55 FR 42509].

Subpart B of part 654 states that an area of substantial unemployment for purposes of Executive Order 10582 is any area classified as a labor surplus area under subpart A. Thus, labor surplus areas under Executive Order 12073 are also areas of substantial unemployment under Executive Order 10582.

The areas described below have been classified by the Assistant Secretary of Labor as labor surplus areas pursuant to 20 CFR 654.5(b)(48 FR 15815 April 12, 1983) and are effective July 1, 1991.

The list of labor surplus areas is published for the use of all Federal agencies in directing procurement activities and locating new plants or facilities.

Signed at Washington, DC on July 11, 1991.
Roberts T. Jones,
Assistant Secretary of Labor.

ADDITIONS TO THE ANNUAL LIST OF LABOR SURPLUS AREAS.

[July 1, 1991]

Labor surplus areas	Civil jurisdictions included
Massachusetts: Brockton PMSA....	Bristol County (Part). Easton Town. Norfolk County (Part). Avon Town.

ADDITIONS TO THE ANNUAL LIST OF LABOR SURPLUS AREAS.—Continued

[July 1, 1991]

Labor surplus areas	Civil jurisdictions included
Fall River, MA-RI PMSA.	Plymouth County (Part). Abington Town. Bridgewater Town. Brockton City. East Bridgewater Town. Halifax Town. West Bridgewater Town. Whitman Town. Bristol County MA (Part). Fall River City. Somerset Town. Swansea Town. Westport Town. Newport County RI (Part). Little Compton Town. Tiverton Town. Middlesex County (Part). Ashby Town. Worcester County (Part). Ashburnham Town. Fitchburg City. Leominster City. Lunenburg Town. Westminster Town.
Fitchburg-Leominster MSA.	
Mississippi:	Calhoun County.
Rhode Island:	Calhoun County.
Pawtucket City.....	Pawtucket City.
Vermont:	Essex County. Orleans County.
Essex County.....	Essex County.
Orleans County.....	Orleans County.

[FR Doc. 91-17012 Filed 7-16-91; 8:45 am]

BILLING CODE 4510-30-M

NATIONAL COMMISSION ON ACQUIRED IMMUNE DEFICIENCY SYNDROME

Working Group on Religious Communities Meeting

AGENCY: National Commission on Acquired Immune Deficiency Syndrome.

ACTION: Notice of cancellation of hearing.

SUMMARY: In accordance with the Federal Advisory Committee Act, Public Law 92-463 as amended, the National Commission on Acquired Immune Deficiency Syndrome announces the cancellation of the Working Group on Religious Communities meeting.

DATE AND TIME: Thursday, July 18, 1991
9 a.m. to 5 p.m.

PLACE: Omni Shoreham Hotel, 2500 Calvert Street NW., Washington, DC 20008.

FOR FURTHER INFORMATION CONTACT:
Maureen Byrnes, Executive Director,
The National Commission on Acquired Immune Deficiency Syndrome, 1730 K Street NW., suite 815, Washington, DC 20006 (202) 254-5125.

Dated: July 12, 1991.

Maureen Byrnes,
Executive Director.

[FR Doc. 91-16989 Filed 7-18-91; 8:45 am]

BILLING CODE 6820-CN-M

NATIONAL COMMISSION ON SEVERELY DISTRESSED PUBLIC HOUSING

Meeting Announcement

AGENCY: National Commission on Severely Distressed Public Housing.

ACTION: Notice of meeting.

SUMMARY: In accordance with the Federal Advisory Committee Act, Public Law 92-463, as amended, the National Commission on Severely Distressed Public Housing announces a forthcoming meeting of the Commission.

DATES: Friday, July 26, 1991, 2 p.m. to 5 p.m.

ADDRESSES: 1100 L Street NW., room 7121, Washington, DC 20005.

FOR FURTHER INFORMATION CONTACT:
Carmelita Pratt, Administrative Officer,
The National Commission on Severely Distressed Public Housing, 1100 L Street NW., room 7121, Washington, DC 20005 (202) 275-6933.

TYPE OF MEETING: Open.

Due to scheduling difficulties, this notice could not be published 15 days prior to this meeting as required by Federal Advisory Committee Act.

Carmelita R. Pratt,
Administrative Officer.

[FR Doc. 91-16945 Filed 7-16-91; 8:45 am]

BILLING CODE 6820-07-M

NATIONAL FOUNDATION ON THE ARTS AND THE HUMANITIES

National Council on the Humanities; Meeting

July 11, 1991.

Pursuant to the provisions of the Federal Advisory Committee Act (Pub. L. 92-463, as amended) notice is hereby given that a meeting of the National Council on the Humanities will be held in Washington, DC on August 8-9, 1991.

The purpose of the meeting is to advise the Chairman of the National Endowment for the Humanities with respect to policies, programs, and procedures for carrying out her functions, and to review applications for financial support and gifts offered to the Endowment and to make recommendations thereon to the Chairman.

The meeting will be held in the Old Post Office Building, 1100 Pennsylvania Avenue, NW., Washington, DC. A portion of the morning and afternoon sessions on August 8-9, 1991, will not be open to the public pursuant to subsections (c)(4), (6) and (9)(B) of section 552b of title 5, United States Code because the Council will consider information that may disclose: Trade secrets and commercial or financial information obtained from a person and privileged or confidential; information of a personal nature the disclosure of which will constitute a clearly unwarranted invasion of personal privacy; and information the disclosure of which would significantly frustrate implementation of proposed agency action. I have made this determination under the authority granted me by the Chairman's Delegation of Authority dated November 13, 1989.

The agenda for the sessions on August 8, 1991, will be as follows:

Committee Meetings

- 8:30-9 a.m.: Coffee for Council Members—room 526 (Open to the Public)
- 9-10 a.m.: Committee Meetings—Policy Discussion
Education Programs—room M-14
Fellowships Programs—room 316-2
Public Programs—room 415
Research Programs/Preservation Programs—room 315
State Programs/Challenge Grants—room M-07
- 10 a.m. until Adjourned: [Closed to the Public for the reasons stated above]—Consideration of specific applications

The morning session on August 9, 1991, will convene at 9 a.m., in the 1st Floor Council Room, M-09, and will be open to the public. The agenda for the morning session will be as follows:

(Coffee for Staff and Council members attending the meeting will be served from 8:30-9 a.m.)

Minutes of the Previous Meeting Reports

- A. Introductory Remarks.
- B. Introduction of New Staff.
- C. Contracts Awarded in the Previous Quarter.
- D. Status of Fiscal Year 1991 Funds.
- E. Status of Fiscal Year 1992 Appropriation Request.
- F. Legislation.
- G. Committee Reports on Policy and General Matters.
- 1. Education Programs.
- 2. Fellowships Programs.
- 3. Public Programs.

4. Research Programs.
5. Preservation Programs.
6. State Programs.
7. Challenge Grants.

The remainder of the proposed meeting will be given to the consideration of future budget requests and specific applications (closed to the public for the reasons stated above).

Further information about this meeting can be obtained from Ms. Catherine Wolhowe, Advisory Committee Management Officer, Washington, DC 20506, or call area code (202) 786-0322.

*Catherine Wolhowe,
Advisory Committee Management Officer.*

[FR Doc. 91-17024 Filed 7-16-91; 8:45 am]
BILLING CODE 7536-01-M

NUCLEAR REGULATORY COMMISSION

Regional State Liaison Officers' Meeting

On August 28 and 29, 1991, the Nuclear Regulatory Commission (NRC) will sponsor a regional meeting with the Governor-appointed State Liaison Officers from Arkansas, Colorado, Idaho, Kansas, Louisiana, Nebraska, Texas, New Mexico, North Dakota, South Dakota, Utah, Wyoming, Montana, and Oklahoma. The subjects will include Decommissioning, Low-Level Waste, Emergency Preparedness, Agreement State Compatibility, and the Below Regulatory Concern policy, as well as other items of mutual regulatory interest.

The meeting will be conducted at the Region IV office, 611 Ryan Plaza, Arlington, Texas. The meeting is open to the public for attendance and observation and will take place between 8:30 a.m. and 5 p.m. on Wednesday, August 28, and from 8:30 a.m. until 12 p.m. on Thursday, August 29, 1991.

Questions regarding this meeting should be directed to Mindy Landau at (301) 492-0308.

Dated at Rockville, Maryland this 8th day of July 1991.

For the Nuclear Regulatory Commission.

*Carlton Kammerer,
Director, State Programs, Office of
Governmental and Public Affairs.*

[FR Doc. 91-17000 Filed 7-16-91; 8:45 am]
BILLING CODE 7590-01-M

OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE

Services Policy Advisory Committee; Meeting

AGENCY: Office of the United States Trade Representative.

SUBJECT: Services Policy Advisory Committee.

ACTION: Notice of meeting and determination of closing of meeting.

SUMMARY: The meeting of the Services Policy Advisory Committee (SPAC) is to be held Wednesday, July 17, 1991, in Washington, DC, from 2 p.m. to 4:30 p.m., at the Hay Adams Hotel, Lafayette Rooms. The meeting will include a review and discussion of current issues which influence U.S. trade policy. Pursuant to section 2155(f)(2) of title 19 of the United States Code, I have determined that this meeting will be concerned with matters the disclosure of which would seriously compromise the Government's negotiating objectives or bargaining positions.

ADDRESSES: 800 17th Street, NW., Washington, DC 20506.

FOR FURTHER INFORMATION CONTACT: Mollie Van Heuven, Director, Office of Private Sector Liaison, Office of the United States Trade Representative, Executive Office of the President.

*Carla A. Hills,
United States Trade Representative.*

[FR Doc. 91-17055 Filed 7-16-91; 8:45 am]
BILLING CODE 3190-01-M

POSTAL RATE COMMISSION

Commission Visit

July 11, 1991.

On Tuesday, July 30, 1991, Commission Chairman George W. Haley, Commissioner W.H. "Trey" LeBlanc, III and members of the Commission advisory staff will visit Scan-Code, East Hartford, Connecticut; on Wednesday, July 31, 1991, they will visit ADVO-System, Windsor, Connecticut. The purpose of the visits is to learn of mailer practices to take advantage of new rate discounts.

A report of these visits will be on file with the Commission Docket Room. For further information contact John Bovard at 202-789-6816.

*Charles L. Clapp,
Secretary.*

[FR Doc. 91-18980 Filed 7-16-91; 8:45 am]
BILLING CODE 7710-FW-M

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34-29431; File No. SR-NSCC-91-05]

Self-Regulatory Organizations; National Securities Clearing Corporation; Filing and Immediate Effectiveness of Proposed Rule Change Relating to the Accommodation of Step-Out Trades

July 10, 1991.

Pursuant to section 19(b) of the Securities Exchange Act of 1934 ("Act"),¹ notice is hereby given that on May 22, 1991, the National Securities Clearing Corporation ("NSCC") filed with the Securities and Exchange Commission ("Commission") the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the self-regulatory organization ("SRO"). The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. SRO's Statement of the Terms of Substance of the Proposed Rule Change

The proposed rule change consists of a modification to accommodate the proposed new service of the New York Stock Exchange ("NYSE") that will enhance the processing of step-out trades.²

II. SRO's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, NSCC included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. NSCC has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. SRO's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

NYSE has proposed a new service, known as the "Step-Out Service," that will enhance the process whereby prior to settlement all or a part of a securities transaction is transferred from one NYSE clearing member to another NYSE

clearing member.³ The purpose of this NSCC rule proposal is to accommodate the new NYSE service. Currently, these post-execution transfers are submitted to NSCC by its members in several ways (e.g., NYSE questioned trade procedures) because no particular automated system provides such a post-execution transfer service.

Under NYSE's proposed Step-Out Service, step-outs will be processed on a computerized basis within NYSE's Overnight comparison System ("OCS").⁴ Because NYSE plans to process step-outs electronically in OCS, NSCC anticipates that some step-outs will occur and will be received by NSCC on the trade dates of the original securities transactions.⁵ NSCC proposes to accommodate such trade date step-outs by amending its Procedures so that step-outs are included in its "Adjustment Contracts."⁶ NSCC notes that the same day step-out data will appear in the Adjustment Contracts sooner than other OCS data.⁷

Secondly, the proposed rule change will make a technical correction to NSCC's Procedures to indicate that cash trades, sellers option trades, and next day trades⁸ will be reflected on NSCC's

Adjustment Contracts and not on NSCC's Regular Way T+1 Contract Lists.⁹ NSCC notes in the filing that such trades must be settled directly between the trading parties. Inasmuch as the proposed rule change will permit a more efficient method for processing these trades, it is consistent with the requirements of the Act, particularly section 17A of the Act, and the rules and regulations thereunder.

B. SRO's Statement on Burden on Competition

NSCC does not believe that the proposed rule will have an impact or impose a burden on competition.

C. SRO's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

No written comments have been solicited or received. NSCC will notify the Commission of any written comments received.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

The foregoing rule change has become effective pursuant to section 19(b)(3)(A)(i) of the Act¹⁰ and subparagraph (e) of the rule 19b-4 of the Act¹¹ because the proposed rule change effects a change in an existing service of NSCC that does not adversely affect the safeguarding of securities or funds in NSCC's custody or control and does not significantly affect the rights or obligations of NSCC or its participants. The proposed rule change merely provides that step-out data will be reflected in Adjustment Contracts which will be produced daily to accommodate processing of step-out transactions in the NYSE OCS. At any time within sixty days of the filing of such proposed rule change, the Commission may summarily abrogate such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing. Persons making written submissions should file six copies thereof with the Secretary, Securities and Exchange

¹ 15 U.S.C. 78s(b).

² The term "step-out" refers to the post-execution transfer of all or part of an open trade between clearing firms. For examples of the various reasons why clearing members might engage in step-out transactions, see Securities Exchange Act Release No. 29156, *infra* note 3.

³ Securities Exchange Act Release No. 29156 (May 1, 1991), 56 FR 21514 [SEC File No. SR-NYSE-91-09].

⁴ OCS is NYSE's major automated system for the post-execution processing of securities transactions. For a discussion of OCS, see Securities Exchange Act Release No. 29827 (March 14, 1989), 54 FR 11470 (SEC File No. SR-NYSE-88-36).

⁵ The NYSE estimates that most step-out transactions (approximately 99%) occur post-comparison, usually on T+1. NSCC states that currently it can process step-outs occurring on T+1 or later as adjustments under its existing procedures. NSCC, however, anticipates that NYSE's recent proposal (File No. SR-NYSE-91-09) to authorize NYSE to process step-outs electronically in OCS will mean that some step-out transactions will be effected on trade date and will be transmitted to NSCC on trade date with other OCS data. It is these trade date step-outs that this NSCC proposal is designed to address. Telephone conversation between Karen Saperstein, Associate General Counsel, NSCC, and Thomas C. Eter, Jr., Attorney, Division of Market Regulation, SEC (June 19, 1991).

⁶ "Adjustment Contracts" are prepared by NSCC daily and show all compared trade data resulting from adjustments processed by NYSE and the American Stock Exchange, Inc. NSCC Procedures, § II.B.1.

⁷ As proposed, the Adjustment Contracts will be prepared each evening and will show compared trade data resulting from the day after trade date (i.e., "T+1") and older adjustments. Step-out data, however, will be reflected on a same day basis. NSCC Procedures, § II.B.1.

⁸ For definitions of "cash," "seller's option," "next day," and "regular way," see NYSE Rule 64.

⁹ NSCC's "Regular Way T+1 Contract List" primarily categorizes trade data as compared, uncomparied, and advisory. It is not part of the trade adjustment process. NSCC Procedures, § II.B.1.

¹⁰ 15 U.S.C. 78s(b)(3)(A)(i).

¹¹ 17 CFR 240.19b-4.

Commission, 450 Fifth Street NW., Washington, DC 20549. Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with provisions of 5 U.S.C. 552, will be available for inspection and copying in the Commission's Public Reference Section, 450 Fifth Street NW., Washington, DC 20549. Copies of such filing will also be available for inspection and copying at the principal office of NSCC. All submissions should refer to File Number SR-NSCC-91-05 and should be submitted by August 7, 1991.

For the Commission by the Division of Market Regulation, pursuant to delegated authority.¹²

Margaret H. McFarland,
Deputy Secretary.

[FR Doc. 91-17005 Filed 7-16-91; 8:45 am]

BILLING CODE 8010-01-M

[Relese No. 34-29429; File No. SR-OCC-91-10]

Self-Regulatory Organization; The Options Clearing Corporation; Filing of a Proposed Rule Change Relating to Rule on Financial Requirements

July 10, 1991.

Pursuant to section 19(b) of the Securities Exchange Act of 1934 ("Act"), 15 U.S.C. 78s(b), notice is hereby given that on May 24, 1991, The Options Clearing Corporation ("OCC") filed with the Securities and Exchange Commission ("Commission") the proposed rule change as described in Items I, II, and III below, which items have been prepared by the self-regulatory organization. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The proposed rule change would enhance two of OCC's financial responsibility rules and provide for further symmetry between those rules and the Commission's net capital rule.

¹² 17 CFR 200.30-3(a)(12).

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, OCC included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. OCC has prepared summaries, set forth in sections (A), (B), and (C) below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

The purpose of the proposed rule change is to enhance two of OCC's financial responsibility rules and to provide for greater symmetry between those rules and the Commission's net capital rule, rule 15c3-1, 17 CFR 240.15c3-1.

OCC Rule 303, which requires a clearing member to notify OCC of the occurrence of any special event set forth therein, is amended to incorporate the notice provision of newly promulgated paragraph (e)(1)(iv) of rule 15c3-1. Accordingly, a clearing member (other than an exempt non-U.S. clearing member) would be required to inform OCC of its providing of any notice under such paragraph and to furnish OCC with a copy of each notice. OCC believes that this amendment will enhance the effectiveness of its financial surveillance program.

Interpretations and Policies .04 ("Interpretation .04") under OCC rule 305 is also amended. Presently, Interpretation .04 compares the total subordinated debt of a clearing member to the clearing member's total capital regardless of whether or not the subordinated debt qualifies as equity under rule 15c3-1.¹ Interpretation .04 was originally intended to ensure that a clearing member maintains a positive net worth. However, OCC has been advised by clearing members that this Interpretation has impeded efforts to increase their capital positions because of its restriction on the use of equity subordinated debt.²

¹ None of OCC's participant exchanges have a standard similar to Interpretation .04.

² The standard currently set forth in Interpretation .04 is not required by the net capital rule for purposes of assessing the subordinate debt levels of a broker-dealer. Rule 15c3-1 requires that a firm's ratio of subordinated debt (excluding any portion qualifying as equity capital) to the debt-

For example, a clearing member with ownership equity of \$10 and equity subordinated debt of \$75 would report net capital of \$85 (assuming no haircuts or other deductions). Accordingly, the clearing members ratio of total subordinated debt to total net capital would be under 90% ($\$75/\$85 = .88$). If the clearing member increased its equity subordinated debt by \$30, the firm's reported capital would then total \$115. Its ratio of total subordinated debt to total net capital, however, would exceed 90% ($105/115 = .91$). Such increase could result in the imposition of any of the restrictions described in rule 305. The current Interpretation .04, therefore, may unduly restrict a clearing member's ability to increase its capital through borrowings of equity subordinated debt.

OCC thus proposes to replace the current formula of Interpretation .04 with a standard premised upon a decline in net worth. This proposed standard is based upon OCC's assessment that a clearing member's net worth should neither deteriorate in any one month by more than its largest pretax monthly loss (exclusive of extraordinary items) as reported over the most recent twelve-month period nor be less than \$75,000, which is 10% of OCC's minimum dollar net capital requirement of \$750,000. OCC believes that this proposed standard will provide it with sufficient notice of deterioration in a clearing member's net worth. Moreover, OCC believes that amended Interpretation .04 reflects OCC's long standing policy that clearing members maintain a positive net worth yet does not restrict their ability to use equity subordinated debt to strengthen their capital position.

CCC believes that the proposed rule change is consistent with section 17A of the Act in that it strengthens OCC's rules relating to financial surveillance and financial responsibility which are designed, in general, to protect OCC, clearing members, and the investing public.

B. Self-Regulatory Organization's Statement on Burden on Competition

OCC does not believe that the proposed rule change would impose any burden on competition.

equity total (total subordinated debt plus net worth) cannot exceed 70% for a period in excess of ninety days. This ratio requirement currently is set forth in Interpretation .05 to rule 305.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants or Others

Comments concerning the proposed rule change were not and are not intended to be solicited in connection with the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Within thirty-five days of the date of publication of this notice in the **Federal Register** or within such longer period (i) as the Commission may designate up to ninety days of such date if its finds such longer period to be appropriate and publishes its reason for so finding or (ii) as to which the self-regulatory organization consents, the Commission will:

(A) By order approve such proposed rule change or

(B) Institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing. Persons making written submissions should file six copies thereof with the Secretary, Securities and Exchange Commission, 450 Fifth Street, NW., Washington, DC 20549. Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for inspection and copying in the Commission's Public Reference Section, 450 Fifth Street, NW., Washington, DC 20549. Copies of such filing will also be available for inspection and copying at the principle office of OCC. All submissions should refer to File No. SR-OCC-91-10 and should be submitted by August 7, 1991.

For the Commission, by the Division of Market Regulation, pursuant to delegated authority.

Margaret H. McFarland,

Deputy Secretary.

[FR Doc. 91-17006 Filed 7-16-91; 8:45 am]

BILLING CODE 8010-01-M

[Release No. 34-29432; File No. SR-PTC-91-09]

Self-Regulatory Organizations; Filing of Proposed Rule Change by Participants Trust Company To Permit It To Join the Securities Clearing Group

July 10, 1991.

Pursuant to section 19(b) of the Securities Exchange Act of 1934,¹ notice is hereby given that on, June 17, 1991, Participants Trust Company ("PTC") filed with the Securities and Exchange Commission ("Commission") the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the self-regulatory organization ("SRO"). The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. SRO's Statement of the Terms of Substance of the Proposed Rule Change

The proposed rule change, which has been approved by PTC's Board of Directors, consists of an amendment to the Securities Clearing Group ("SCG") Agreement that will allow PTC to become a member of SCG.

II. SRO's Statement of the Purposes of, and Statutory Basis for the Proposed Rule Change

In its filing with the Commission, the SRO included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The SRO has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. SRO's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

The purpose of the proposed rule filing is to permit PTC to join SCG. SCG, a voluntary association of clearing agency SROs that are registered with the Commission under section 17A(b) of the Act,² was formed in 1988 by seven clearing agency SROs³ for the purpose

¹ 15 U.S.C. 78s(b).

² 15 U.S.C. 78q-1(b).

³ The original seven members of SCG were: The Depository Trust Company, Midwest Clearing Corporation, Midwest Securities Trust Company, National Securities Clearing Corporation, The Options Clearing Corporation, Philadelphia Depository Trust Company, and Stock Clearing Corporation of Philadelphia. Since its formation, Boston Stock Exchange Clearing Corporation, MBS Clearing Corporation, and Government Securities Clearing Corporation have become members of SCG.

of engaging in coordinated action to identify and address common issues and risks relative to the clearance and settlement system. One of the goals of the SCG is to develop procedures to identify financial and operational conditions of common participants which might create risks to the SCG members.⁴

Each member of SCG is a party to the SCG Agreement.⁵ SCG members have voted to allow PTC to join SCG.⁶ PTC believes that membership in SCG, as a forum for discussion and cooperative work on clearance and settlement issues, will benefit PTC, its participants, and the other SCG members.

The proposed rule change is consistent with the requirements of section 17A of the Act⁷ because it foster cooperation and coordination with persons engaged in the clearance and settlement of securities transactions and removes impediments to and perfects the mechanism of a national system for the prompt and accurate clearance and settlement of securities transactions.

B. SRO's Statement on Burden on Competition

PTC does not believe that the proposed rule change will have any impact on competition.

C. SRO's Statement on Comments on the Proposed Rule Change Received From Members, Participants or Others

PTC has not solicited and does not intend to solicit comments on this proposed rule change. PTC has not received any unsolicited written comments from participants or other interested parties.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Within thirty-five days of the date of publication of this notice in the **Federal Register** or within such longer period (i) As the Commission may designate up to

⁴ Securities Exchange Act Release No. 27044 (July 18, 1989), 54 FR 30963 (order authorizing SROs to form SCG).

⁵ The SCG Agreement is the governing document of SCG. For the text of the Agreement, see Securities Exchange Act Release No. 26300 (November 21, 1988), 53 FR 48353.

⁶ The National Securities Clearing Corporation ("NSCC") has submitted a companion filing proposing that the SCG Agreement be amended to allow PTC to become a SCG member. In that filing, NSCC reports that at a meeting held on December 19, 1990, SCG members voted unanimously to allow PTC to become a party to the SCG Agreement and a member of SCG. Securities Exchange Act Release No. 28872 (February 11, 1991), 56 FR 6696 (File No. SR-NSCC-91-01).

⁷ 15 U.S.C. 78q-1.

ninety days of such date if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the SRO consents, the Commission will:

- (A) By order approve such proposed rule change, or
- (B) Institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing. Persons making written submissions should file six copies thereof with the Secretary, Securities and Exchange Commission, 450 Fifth Street, NW., Washington, DC 20549. Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for inspection and copying in the Commission's Public Reference Section, 450 Fifth Street, NW., Washington, DC 20549. Copies of such filing will also be available for inspection and copying at the principal office of PTC. All submissions should refer to File No. SR-PTC-91-09 and should be submitted by August 7, 1991.⁸

Margaret H. McFarland,
Deputy Secretary.

[FR Doc. 91-17004 Filed 7-18-91; 8:45 am]

BILLING CODE 9010-01-M

[File No. 22-20649]

Application and Opportunity for Hearing; Integrated Resources, Inc.

July 12, 1991.

Notice is hereby given that Integrated Resources, Inc. (the "Company") has filed an application pursuant to clause (ii) of section 310(b)(1) of the Trust Indenture Act of 1939, as amended (the "Act") for a finding by the Securities and Exchange Commission (the "Commission") that the trusteeship of Shawmut Bank, N.A. ("Bank") as successor trustee to the following trustees under the following four indentures (the "Indentures") is not so likely to involve a material conflict of interest as to make it necessary, in the public interest or for the protection of investors, to disqualify Shawmut Bank

for acting as trustee under the Indentures:

1. Indenture dated as of May 1, 1987 between the Company and Mellon Bank, N.A. ("Mellon"), as trustee, (the "10% Indenture"), with respect to the Company's 10% Senior Notes due May 1, 1990 (the "10% Notes");
2. Indenture dated as of May 1, 1987 between the Company and Mellon, as trustee (the "10 1/4% Indenture"), with respect to the Company's 10 1/4% Senior Notes due May 1, 1992 (the "10 1/4% Notes");
3. Indenture dated as of May 1, 1987 between the Company and Mellon, as trustee (the "11 1/8% Indenture"), with respect to the Company's 11 1/8% Senior Notes due May 1, 1994 (the "11 1/8% Notes"); and
4. Indenture dated as of November 30, 1988 between the Company and Irving Trust Company ("Irving"), as trustee (the "Floating Rate Indenture"), with respect to the Company's Senior Floating Rate Notes due December 1, 1993 (the "Notes"). Section 310(d) of the Act provides in part that if a trustee under an indenture qualified under the Act has or shall acquire any conflicting interest (as defined in such section), it shall, within 90 days after ascertaining that it has such conflicting interest, either eliminate such conflicting interest or resign. Subsection (1) of that section provides, with certain exceptions stated therein, that a trustee under a qualified indenture shall be deemed to have a conflicting interest if such trustee is trustee under another indenture of the same obligor.

The Company alleges:

1. Pursuant to the 10% Indenture, the Company has outstanding \$104,075,000 principal amount of 10% Notes. The 10% Notes were registered under the Securities Act of 1933 (the "1933 Act") and the 10% Indenture was qualified under the Act.

2. Pursuant to the 10 1/4% Indenture, the Company has outstanding \$50,000,000 principal amount of its 10 1/4% Notes. The 10 1/4% Notes were registered under the 1933 Act and the 10 1/4% Indenture was qualified under the Act.

3. Pursuant to the 11 1/8% Indenture, the Company has outstanding \$57,500,000 principal amount of its 11 1/8% Notes. The 11 1/8% Notes were registered under the 1933 Act and the 11 1/8% Indenture was qualified under the Act.

4. Pursuant to the Floating Rate Indenture, the Company has outstanding \$34,000,000 principal amount of its Notes due December 1, 1993. The Notes have not been registered under the 1933 Act and the Floating Rate Indenture has not been qualified under the Act, in reliance on the exemption provided in section

304(b) of the Act, because the Notes were offered and sold in a transaction exempt from the registration requirements of the 1933 Act.

5. In connection with the Company's ongoing liquidity crisis Mellon and Irving have resigned as trustees under the respective Indentures, and the Bank has been appointed as successor trustee under each Indenture.

6. As a result of the liquidity crisis, the Company has been unable to pay its short-term debt, has defaulted on the scheduled interest payments on those issues of its long-term debt securities which have come due subsequent to June 15, 1989, and has ceased making payments under certain real estate and equipment leases and other agreements.

7. On February 13, 1990, the Company filed a voluntary petition for reorganization under title 11 of the United States Code, and is in the process of developing a plan of reorganization. The Company is currently operating its business as debtor-in-possession subject to the supervision of the United States Bankruptcy Court for the Southern District of New York.

8. Each series of debt securities issued under the above-referenced Indentures is wholly unsecured and is *pari passu* to each other series of debt securities issued under an Indenture.

9. The provisions of the Indentures are not so likely to involve a material conflict of interest as to make it necessary in the public interest or for the protection of investors to disqualify the Bank from acting as trustee under said Indentures.

10. The Company waives notice of hearing, hearing and any and all rights to specify procedures under the Rules of Practice of the Commission in connection with this matter.

For a more detailed account of the matters of fact and law asserted, all persons are referred to the application which is on file in the Offices of the Commission's Public Reference Section, File Number 22-20649, 450 Fifth Street, NW., Washington, DC 20549.

Notice is further given that any interested persons may, not later than August 6, 1991, request in writing that a hearing be held on such matter stating the nature of his interest, the reasons for such request, and the issues of law or of fact raised by such application which he desires to controvert, or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchanges Commission, 450 Fifth Street, NW., Washington, DC 20549. At any time after

⁸ 17 CFR 200.30-3(a)(12).

said date, the Commission may issue an order granting the application, upon such terms and conditions as the Commission may deem necessary or appropriate in the public interest and for the protection of investors, unless a hearing is ordered by the Commission.

For the Commission, by the Division of Corporation Finance, pursuant to delegated authority.

Margaret H. McFarland,
Deputy Secretary.

[FR Doc. 91-17002 Filed 7-18-91; 8:45 am]
BILLING CODE 8010-01-M

[File No. 22-20650]

Application and Opportunity for Hearing; Integrated Resources, Inc.

July 12, 1991.

Notice is hereby given that Integrated Resources, Inc. (the "Company") has filed an application pursuant to clause (ii) of section 310(b)(1) of the Trust Indenture Act of 1939, as amended (the "Act") for a finding by the Securities and Exchange Commission (the "Commission") that the trusteeship of Connecticut National Bank ("Bank"), formerly Hartford National Bank and Trust Company, as successor trustee to the following trustees under the following four indentures (the "Indentures") is not so likely to involve a material conflict of interest as to make it necessary, in the public interest or for the protection of investors, to disqualify Connecticut National from acting as trustee under the Indentures:

1. Indenture dated as of July 15, 1985, between the Company and Manufacturers Hanover Trust Company ("Manufacturers Hanover"), as trustee (the "13% Indenture"), with respect to the Company's 13% Senior Subordinated Notes due July 15, 1995 (The "13% Notes");

2. Indenture dated as of April 15, 1986, between the Company and Manufacturers Hanover, as trustee (the "10% Indenture"), with respect to the Company's 10% Senior Subordinated Notes due April 15, 1996 (the "10% Notes");

3. Indenture dated as of August 15, 1988 between the Company and Security Pacific National Trust Company (New York), as trustee (the "12 1/4% Indenture"), with respect to the Company's 12 1/4% Senior Subordinated Notes due August 15, 1998 (the "12 1/4% Notes"); and

4. Indenture dated as of April 1982 between the Company and the Bank, as trustee (the "8% Indenture"), with respect to the Company's 8% Senior

Subordinated Debentures due April 15, 1997 (the "8% Debentures").

Section 310(b) of the Act provides in part that if a trustee under an indenture qualified under the Act has or shall acquire any conflicting interest (as defined in such section), it shall, within 90 days after ascertaining that it has such conflicting interest, either eliminate such conflicting interest or resign. Subsection (1) of that section provides, with certain exceptions stated therein, that a trustee under a qualified indenture shall be deemed to have a conflicting interest if such trustee is trustee under another indenture of the same obligor.

The Company alleges:

1. Pursuant to the 13% Indenture, the Company has outstanding \$125,000,000 principal amount of its 13% Notes. The 13% Notes were registered under the Securities Act of 1933 (the "1933 Act") and the 13% Indenture was qualified under the Act.

2. Pursuant to the 10% Indenture, the Company has outstanding \$299,000,000 principal amount of its 10% Notes. The 10% Notes were registered under the 1933 Act and the 10% Indenture was qualified under the Act.

3. Pursuant to the 12 1/4% Indenture, the Company has outstanding \$100,000,000 principal amount of its 12 1/4% Notes. The 12 1/4% Notes were registered under the 1933 Act and the 12 1/4% Indenture was qualified under the Act.

4. Pursuant to the 8% Indenture, the Company has outstanding \$63,350,000 principal amount of its 8% Debentures. The 8% Debentures were registered under the 1933 Act and the 8% Indenture was qualified under the Act.

5. In connection with the Company's ongoing liquidity crisis the trustees under the 13%, 10% and 12 1/4% Indentures have resigned, and the Bank has been appointed as the successor trustee under each such Indenture. As a result of the liquidity crisis, the Company has been unable to pay its short-term debt, has defaulted on the scheduled interest payments on those issues of its long-term debt securities which have come due subsequent to June 15, 1989, and has ceased making payments under certain real estate and equipment leases and other agreements.

6. On February 13, 1990, the Company filed a voluntary petition for reorganization under title 11 of the United States Code, and is in the process of developing a plan of reorganization. The Company is currently operating its business as debtor-in-possession subject to the supervision of the United States Bankruptcy Court for the Southern District of New York.

7. Each series of debt securities issued under the above-referenced Indentures is wholly unsecured and is *pari passu* to each other series of debt securities issued under an Indenture.

8. The provisions of the Indentures are not so likely to involve a material conflict of interest as to make it necessary in the public interest or for the protection of investors to disqualify the Bank from acting as trustee under said Indentures.

9. The Company waives notice of hearing, hearing and any and all rights to specify procedures under the Rules of Practice of the Commission in connection with this matter.

For a more detailed account of the matters of fact and law asserted, all persons are referred to the application which is on file in the Offices of the Commission's Public Reference Section, File Number 22-20650, 450 Fifth Street, NW., Washington, DC 20549.

Notice is further given that any interested persons may, not later than August 6, 1991, request in writing that a hearing be held on such matter stating the nature of his interest, the reasons for such request, and the issues of law or of fact raised by such application which he desires to controvert, or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed to: Secretary, Securities and Exchange Commission, 450 Fifth Street, NW., Washington, DC 20549. At any time after said date, the Commission may issue an order granting the application, upon such terms and conditions as the Commission may deem necessary or appropriate in the public interest and for the protection of investors, unless a hearing is ordered by the Commission.

For the Commission, by the Division of Corporation Finance, pursuant to delegated authority.

Margaret H. McFarland,

Deputy Secretary.

[FR Doc. 91-17003 Filed 7-18-91; 8:45 am]

BILLING CODE 8010-01-M

DEPARTMENT OF STATE

[Public Notice 1422]

Working Party 4B of Study Group 4 of the U.S. Organization for the International Radio Consultative Committee (CCIR); Meeting

The Department of State announces that Working Party 4B of Study Group 4 of the U.S. Organization for the International Radio Consultative Committee (CCIR) will meet on August

1, 1991, at the Communications Satellite Corporation, 950 L'Enfant Plaza, SW., Washington, DC, from 9:30 a.m. to 12 noon in the 8th Floor Conference Room.

Study Group 4 deals with matters relating to the fixed satellite service. Working Party 4B treats systems, performance, availability, and maintenance. The purpose of this meeting is to discuss ongoing activities of Working Party 4B and possible U.S. contributions to the meeting scheduled for September 16-20, 1991.

Members of the general public may attend the meeting and join in the discussions subject to instructions of the Chairman. Request for further information should be directed to Mr. Enrique Cuevas, AT&T Bell Laboratories, room 2F-414-A, Crawfords Corner Rd., Holmdel, NJ 07733, phone (201) 949-1130.

Dated: July 8, 1991.

Warren G. Richards,

Chairman, U.S. CCIR National Committee.

[FR Doc. 91-16943 Filed 7-16-91; 8:45 am]

BILLING CODE 4710-07-M

Bureau of Politico-Military Affairs

[Public Notice 1423]

Imposition of Missile Proliferation Sanctions Against Chinese and Pakistani Entities

AGENCY: Department of State.

ACTION: Notice.

SUMMARY: The Secretary of State has determined that two Chinese entities and one Pakistani entity have engaged in missile technology proliferation activities that require imposition of trade sanctions pursuant to the Arms Export Control Act and the Export Administration Act of 1979, as amended by the National Defense Authorization Act for Fiscal Year 1991.

EFFECTIVE DATE: June 25, 1991.

FOR FURTHER INFORMATION CONTACT:

Anthony Pahigian, Office of Proliferation Policy, Bureau of Politico-Military Affairs, Department of State (202-647-4930).

SUPPLEMENTARY INFORMATION: Pursuant to section 73(a)(1) of the Arms Export Control Act (22 U.S.C. 2797b(a)(1)), section 11B(b)(1) of the Export Administration Act of 1979 (50 U.S.C. app. 2410b(b)(1)), and sections 1702 and 1703 of the National Defense Authorization Act for Fiscal year 1990-91 (Pub. L. 101-510), and the President's Memorandum Delegation of Authority of June 25, 1991, the Secretary of State determined on June 25, 1991 that the following foreign persons have engaged

in missile technology proliferation activities that require the sanctions described in section 73(a)(2)(A) of the Arms Export Control Act (22 U.S.C. 2797b(a)(2)(A)) and section 11B(b)(1)(B)(i) of the Export Administration Act of 1979 (50 U.S.C. app. 2410b(b)(1)(B)(i)).

1. China Great Wall Industry Corporation,
2. China Precision Machinery Import-Export Corporation,
3. Space and Upper Atmosphere Research Commission (Pakistan).

The sanctions imposed are: (1) Denial of license applications to export items covered by the Missile Technology Control Regime Annex for two years, and (2) denial of U.S. Government contracts relating to such items. These sanctions shall be implemented by the responsible agencies as provided in the President's Memorandum Delegation of Authority of June 25, 1991.

Dated: July 8, 1991.

Richard A. Clarke,

Assistant Secretary of State for Politico-Military Affairs.

[FR Doc. 91-16944 Filed 7-16-91; 8:45 am]

BILLING CODE 4710-25-M

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings; Agreements Filed During the Week Ended July 5, 1991

The following Agreements were filed with the Department of Transportation under the provisions of 49 U.S.C. 412 and 414. Answers may be filed within 21 days of date of filing.

Docket Number: 47636.

Date filed: July 5, 1991.

Parties: Members of the International Air Transport Association.

Subject: TC12 Reso/P 1342 dated June 24, 1991, Mid Atlantic-Europe Reso 001ii (R-1) & 015v(R-2).

Proposed Effective Date: August 1, 1991.

Docket Number: 47637.

Date filed: July 5, 1991.

Parties: Members of the International Air Transport Association.

Subject: TC23 Reso/C 0202 dated May 27, 1991, TC23 (Except to/from US Territories)—R-1 To R-34.

Proposed Effective Date: October 1, 1991 and April 1, 1992.

Phyllis T. Kaylor,

Chief, Documentary Services Division.

[FR Doc. 91-17044 Filed 7-16-91; 8:45 am]

BILLING CODE 4910-62-M

Applications for Certificates of Public Convenience and Necessity and Foreign Air Carrier Permits Filed Under Subpart Q During the Week Ended July 5, 1991

The following applications for certificates of public convenience and necessity and foreign air carrier permits were filed under subpart Q of the Department of Transportation's Procedural Regulations (See 14 CFR 302.1701 *et. seq.*). The due date for answers, conforming application, or motion to modify scope are set forth below for each application. Following the answer period DOT may process the application by expedited procedures. Such procedures may consist of the adoption of a show-cause order, a tentative order, or in appropriate cases a final order without further proceedings.

Docket Number: 47632.

Date filed: July 2, 1991.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: July 8, 1991.

Description: Conforming application of United Air Lines, Inc., pursuant to section 401 of the Act and subpart Q of the Regulations applies for a certificate of public convenience and necessity to authorize service between the terminal point Los Angeles, California, and the coterminous points Sao Paulo and Rio de Janeiro, Brazil.

Docket Number: 47633.

Date filed: July 2, 1991.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: July 8, 1991.

Description: Contingent Application of American Airlines, Inc. pursuant to section 416(b) of the Act of an exemption authorizing service between the U.S. and Brazil, and for the allocation of nine additional weekly frequencies effective January 1, 1993.

Docket Number: 47634.

Date filed: July 3, 1991.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: July 31, 1991.

Description: Application of A/S Conair Consolidated Aircraft Corporation, Ltd., pursuant to section 402 of the Act and subpart Q of the Regulations requests a foreign air carrier permit to provide charter foreign air transportation of persons, property and mail between a point or points in Denmark, Norway and Sweden, on the one hand, and points in the United States on the other. A/C Conair will commence operations with charter

flights from Copenhagen, Denmark to St. Petersburg, Florida.

Docket Number: 47621.

Date filed: July 2, 1991.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: July 8, 1991.

Description: Amendment No. 1 to the Application of Delta Air Lines, Inc., requests the Department to grant it a new or amended certificate of public convenience and necessity authorizing it to operate nonstop combination service between Los Angeles, California and Atlanta, Georgia, on the one hand, and Sao Paulo and Rio de Janeiro Brazil, on the other hand, and to allocate to Delta seven weekly combination frequencies effective January 1992 for the Los Angeles-Brazil service and an additional seven weekly frequencies effective January 1, 1993 for the Atlanta-Brazil service, and such other and further relief as the public convenience and necessity and the public interest may require.

Docket Number: 43301.

Date filed: July 3, 1991.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: July 31, 1991.

Description: Amendment No. 1 to the Application of Pan American World Airways, Inc. with the withdrawal of its request for Washington-Madrid nonstop operating authority, and that the remainder of said application be processed and granted expeditiously.

Docket Number: 47001.

Date filed: July 3, 1991.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: July 31, 1991.

Description: Amendment No. 1 to the Application of United Air Lines, Inc. requests that its certificate authority be issued so as to authorize it to operate over the following route; "Between the terminal point Washington, DC., and the coterminous points Madrid, Barcelona, Malaga, and Palma de Mallorca, Spain".

Phyllis T. Kaylor,

Chief, Documentary Services Division.

[FR Doc. 91-17045 Filed 7-16-91; 8:45 am]

BILLING CODE 4910-62-M

Federal Aviation Administration

Radio Technical Commission for Aeronautics (RTCA), Special Committee 169, Aeronautical Data Link Applications; Meeting

Pursuant to section 10(a) (2) of the Federal Advisory Committee Act (Pub.

L. 92-463, 5 U.S.C., appendix I), notice is hereby given for the third meeting of Special Committee 169 to be held August 6-7, 1991, at the MITRE Corporation, Conference Room 5BO2, Wilson Building, 7600 Old Springhouse Road, McLean, Virginia, commencing at 9:30 a.m.

The agenda for this meeting is as follows: (1) Chairman's introductory remarks; (2) Review of meeting agenda; (3) Approval of minutes of the second meeting held on June 10-11, 1991, RTCA Paper No. XXX-91/SC169-XX (enclosed); (4) Technical presentations; (5) Report of Air Traffic Services Data Link Communications Working Group Activities; (6) Develop proposals to establish new special committees; (7) Establish working groups; (8) Assignment of tasks; (9) Other business; (10) Date and place of next meeting.

Attendance is open to the interested public but limited to space available. With the approval of the Chairman, members of the public may present oral statements at the meeting. Persons wishing to present statements or obtain information should contact the RTCA Secretariat, One McPherson Square, 1425 K Street NW., suite 500, Washington, DC 20005; (202) 682-0266. Any member of the public may present a written statement to the committee at any time.

Issued in Washington, DC, on July 9, 1991.

Steve Zaldman,

Designated Officer.

[FR Doc. 91-16988 Filed 7-18-91; 8:45 am]

BILLING CODE 4910-13-M

National Highway Traffic Safety Administration

Rulemaking, Research and Enforcement Programs

AGENCY: National Highway Traffic Safety Administration, DOT.

ACTION: Notice.

SUMMARY: This notice announces a public meeting at which NHTSA will answer questions from the public and the automobile industry regarding the agency's rulemaking, research and enforcement programs.

This notice also announces an additional meeting to be held on pedestrian head impact protection.

DATES: The Agency's regular, quarterly public meeting relating to the agency's rulemaking, research, and enforcement programs will be held on August 20, 1991, beginning at 10:15 a.m. and ending at approximately 1 p.m. Questions relating to the agency's rulemaking, research, and enforcement programs,

must be submitted in writing by August 12, 1991, to the address shown below. If sufficient time is available, questions received after the August 12 date may be answered at the meeting. The individual, group or company submitting a question(s) does not have to be present for the question(s) to be answered. A consolidated list of the questions submitted by August 12, 1991, and the issues to be discussed will be mailed to interested persons by August 14, 1991, and will be available at the meeting.

The second meeting, on pedestrian head impact protection, will be held on August 20, 1991, beginning at 2 p.m. Anyone interested in making a presentation at this session must submit a request in writing, stating the nature of the presentation, to the address shown below.

Also, written comments on the subject of pedestrian protection will be accepted and must be submitted to the address shown below by October 15, 1991.

ADDRESSES: Questions for the August 20 meeting relating to the agency's rulemaking, research, and enforcement programs or requests to make presentations at the pedestrian head impact protection meeting should be submitted to Barry Felrice, Associate Administrator for Rulemaking, room 5401, 400 Seventh Street, SW., Washington, DC 20590. The meeting will be held at Wayne State University, Engineering Building (Auditorium), 5050 Anthony Wayne Drive (3rd Avenue), Detroit, Michigan 48202.

SUPPLEMENTARY INFORMATION: NHTSA will hold its regular, quarterly meeting to answer questions from the public and industry regarding the agency's rulemaking, research, and enforcement programs on August 20, 1991. The meeting will be held at Wayne State University, Engineering Building (Auditorium), 5050 Anthony Wayne Drive (3rd Avenue), Detroit, Michigan. The purpose of the meeting is to focus on those phases of NHTSA activities which are technical, interpretative or procedural in nature. A transcript of the meeting will be available for public inspection in the NHTSA Technical Reference Section in Washington, DC, within four weeks after the meeting. Copies of the transcript will then be available at twenty five cents for the first page and five cents for each additional page (length has varied from 100 to 150 pages) upon request to NHTSA Technical Reference section, room 5108, 400 Seventh Street, SW., Washington, DC 20590. The Technical

Reference Section is open to the public from 9:30 a.m. to 4 p.m.

The agency also wishes to announce a second meeting, on pedestrian head impact protection. The purpose of this meeting is to inform the general public concerning the pedestrian head impact protection research and rulemaking activities conducted by the agency over the past 5-7 years. The magnitude of the pedestrian safety problem will be discussed initially with a presentation by agency staff on overall pedestrian injury and fatality statistics. The pedestrian body regions most often injured in collisions with motor vehicles and the vehicle areas most often struck by pedestrian accident victims will be highlighted. This presentation will proceed to discuss the magnitude of the safety problem resulting from pedestrian head impact with the frontal horizontal surface component of passenger cars and light trucks commonly known as the hood or engine or storage compartment cover.

A second presentation will address the agency's research in the area of pedestrian head impact injury assessment and injury severity reduction. This will include a discussion of the development of the pedestrian head impact test device and test procedures, and means to measure hood performance.

Also, the agency will discuss the estimated costs and benefits of changes to vehicles to reduce pedestrian casualties. The agency's procedures for estimating the target population, assessing the reduction in fatalities and injury severity, and estimating the cost of the vehicle changes will be discussed.

NHTSA is seeking comments on any and all topics which will be discussed at this public meeting. Questions and comments will be accepted after the agency's presentations. The public is invited to give additional presentations. Also, written comments will be accepted on the subject.

Oral comments made at the meeting, and written comments submitted by the above date, will aid the agency in reaching a regulatory decision on this subject, as discussed in NHTSA's Priority Plan, 1991-1993.

Issued on July 12, 1991.

Barry Felrice,

Associate Administrator for Rulemaking.

[FR Doc. 91-17046 Filed 7-16-91; 8:45 am]

BILLING CODE 4910-59-M

DEPARTMENT OF THE TREASURY

Public Information Collection Requirements Submitted to OMB for Review

July 11, 1991.

The Department of Treasury has submitted the following public information collection requirement(s) to OMB for review and clearance under the Paperwork Reduction Act of 1980. Public Law 96-511. Copies of the submission(s) may be obtained by calling the Treasury Bureau Clearance Officer listed. Comments regarding this information collection should be addressed to the OMB reviewer listed and to the Treasury Department Clearance Officer, Department of the Treasury, room 3171 Treasury Annex, 1500 Pennsylvania Avenue, NW., Washington, DC 20220.

Internal Revenue Service

OMB Number: 1545-1215.

Form Number: IRS Form 1040EZ-1.

Type of Review: Revision.

Title: Income Tax Return for Single Filers With No Dependents.

Description: An expanded test of the Form 1040EZ-1 will be conducted among a sample of taxpayers from Texas, Rhode Island, and Washington who would ordinarily files a standard Form 1040EZ. The test is necessary to determine taxpayer interest in the Form 1040EZ-1 for possible nationwide use.

Respondents: Individuals or households.

Estimated Number of Respondents/Recordkeepers: 8,000.

Estimated Burden Hours Per Respondent/Recordkeeper:

Recordkeeping—7 minutes.

Learning about the law or the form—3 minutes.

Preparing the form—10 minutes.

Copying, assembling, and sending the form to IRS—17 minutes.

Frequency of Response: Annually.

Estimated Total Reporting/

Recordkeeping Burden: 4,880 hours.

Clearance Officer: Garrick Shear (202) 535-4297, Internal Revenue Service, room 5571, 1111 Constitution Avenue, NW., Washington, DC 20224.

OMB Reviewer: Milo Sunderhauf (202) 395-6880, Office of Management and Budget, room 3001, New Executive Office Building, Washington, DC 20503.

Lois K. Holland,

Departmental Reports Management Officer.

[FR Doc. 91-16993 Filed 7-16-91; 8:45 am]

BILLING CODE 4830-01-M

Renewal of the Treasury Borrowing Advisory Committee of the Public Securities Association

The Department of the Treasury, pursuant to the Federal Advisory Committee Act of October 6, 1972, Public Law 92-463, as amended, and with approval of the Secretary of the Treasury, announces the renewal of the Charter of the Treasury Borrowing Committee of the Public Securities Association.

The Secretary of the Treasury has determined that the renewal of the committee is necessary and in the public interest. This determination follows consultation with the Committee Management Secretary, General Services Administration.

The purpose of the committee is to provide informed advice as representatives of the financial community to the Secretary of the Treasury and Treasury staff, upon the Secretary of the Treasury's request, in carrying out Federal financing and in the management of the public debt.

The scope of the activity of the committee is to consider commercial and financial information relevant to its objectives and to consult with and advise the Secretary of the Treasury and Treasury staff with respect to debt management operations, and to make reports and recommendations.

Meetings are closed to the public because the topics of discussion pertain to information exempt from disclosure under section 552(b)(c)(4) and (9)(A)(i) of title 5 of the United States Code, and that the public interest requires that such meetings be closed to the public.

The advice provided consists of commercial and financial information given and received in confidence. As such, debt management advisory committee activities concern matters which fall within the exception covered by section 552(b)(c) of title 5 of the United States Code for matters which are "trade secrets and commercial or financial information obtained from a person and privileged or confidential."

Although Treasury's final announcement of financing plans may not reflect the recommendation provided in reports of an advisory committee, premature disclosure of these reports would lead to significant financial speculation in the securities markets. Thus, these meetings also fall within the exemption covered by section 552(b)(c)(9)(A)(i) of title 5 of the United States Code.

Membership consists of 20 to 25 members who are experts in Government securities markets,

involved in a senior position in debt markets as investor, investment advisor, banker or as a dealer, bank or non-bank in debt securities and are appointed by the Public Securities Association from its association membership. Members must be highly competent, experienced and actively involved in financial markets. Effort is made to get regional representation so that committee views are a reasonable proxy for nationwide views. As far as possible, balance between bank and non-bank dealers is sought. From time to time, members are added to deleted to reflect changing responsibilities and to provide for a rotation of membership in areas where more than one qualified candidate may be available.

In accordance with the Federal Advisory Committee Act, Public Law 92-463, as amended, the Department of the Treasury has renewed the Charter of the Treasury Borrowing Advisory Committee of the Public Securities Association and approved the following membership:

Jon S. Corzine, Partner, Goldman, Sachs & Co., 85 Broad Street, New York, NY 10004.

Morgan B. Stark, President and CEO, Chemical Securities, Inc., New York, NY 10172.

Daniel S. Ahearn, Partner, Wellington Management Company, Boston, MA 02109.

Thomas Bennett, Partner, Miller Anderson & Sherrerd, West Conshohocken, PA 19428.

Louis Betanzos, Executive Vice President, National Bank of Detroit, Detroit, MI 48226.

William Brachfeld, Executive Vice President, Daiaw Securities, Inc., New York, NY 10281.

Raphael de la Gueronniere, Managing Director, William E. Simon & Sons, Inc., Morristown, NJ 07962-1913.

Kenneth de Regt, Managing Director-Governments, Morgan Stanley & Company, New York, NY 10020.

Stephen C. Francis, General Manager, Fischer, Francis, Trees & Watts, London EC2M 7BP England.

Richard S. Fuld, Jr., Vice Chairman, Shearson Lehman Hutton, New York, NY 10281.

Gedale B. Horowitz, Managing Director, Salomon Brothers, Inc., New York, NY 10048.

Richard Kelly, Chairman of the Board, Aubrey G. Lanston & Co., Inc., New York, NY 10005.

Mark F. Kessenich, Jr., President, Eastbridge Capital, Inc., New York, NY 10022.

Daniel T. Napoli, Senior Vice President and Director, Merrill Lynch Capital Markets Risk Management, New York, NY 10281.

Ralph Peters, Acting Chairman of the Board, Discount Corporation of New York, New York, NY 10005.

Richard B. Roberts, Executive Vice President, Wachovia Bank & Trust Co., N.A., Winston-Salem, NC 27150.

Allen Rogers, Managing Director, Bankers Trust Company, New York, NY 10015.

Stephen Thieke, President, J.P. Morgan Securities, New York, NY 10260.

S. Waite Rawls, III, Vice Chairman, Continental Bank, Chicago, IL 60697.

Dated: July 12, 1991.

David M. Nummy,

Acting Assistant Secretary (Management).

[FR Doc. 91-16992 Filed 7-16-91; 8:45 am]

BILLING CODE 4810-25-M

Office of Thrift Supervision

Heritage Federal Savings Bank Richmond, VA; Replacement of Conservator With a Receiver

Notice is hereby given that, pursuant to the authority contained in subdivision (F) of section 5 (d)(2) of the Home Owners' Loan Act, the Office of Thrift Supervision duly replaced the Resolution Trust Corporation as Conservator for Heritage Federal Savings Bank, Richmond, Virginia ("Association"), with the Resolution Trust Corporation as sole Receiver for the Association on July 5, 1991.

Dated: July 12, 1991.

By the Office of Thrift Supervision.

Nadine Y. Washington,

Corporate Secretary.

[FR Doc. 91-17039 Filed 7-16-91; 8:45 am]

BILLING CODE 6720-01-M

International Federal Savings and Loan Association North Miami Beach, FL; Replacement of Conservator With a Receiver

Notice is hereby given that, pursuant to the authority contained in subdivision (F) of section 5 (d)(2) of the Home Owners' Loan Act, the Office of Thrift Supervision duly replaced the Resolution Trust Corporation as Conservator for International Federal Savings and Loan Association, North Miami Beach, Florida ("Association"), with the Resolution Trust Corporation as sole Receiver for the Association on July 5, 1991.

Dated: July 12, 1991.

By the Office of Thrift Supervision.

Nadine Y. Washington,

Corporate Secretary.

[FR Doc. 91-17040 Filed 7-16-91; 8:45 am]

BILLING CODE 6720-01-M

Sunshine Act Meetings

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409) 5 U.S.C. 552b(e)(3).

FEDERAL MINE SAFETY AND HEALTH REVIEW COMMISSION

July 11, 1991.

TIME AND DATE: 10:00 a.m., Thursday, July 18, 1991.

PLACE: Room 600, 1730 K Street NW., Washington, DC.

STATUS: Open.

MATTERS TO BE CONSIDERED: The Commission will consider and act upon the following:

1. *Ideal Cement Company*, Docket No. WEST 88-202-M. (Issues include whether the judge properly found that the absence of side screens on a modified front-end loader affected safety within the meaning of 30 CFR § 56.9002.)

Any person attending this meeting who requires special accessibility features and/or auxiliary aids, such as

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sign language interpreters, must inform the Commission in advance of those needs. Subject to 29 CFR § 2706.150(a)(3) and § 2706.160(d).

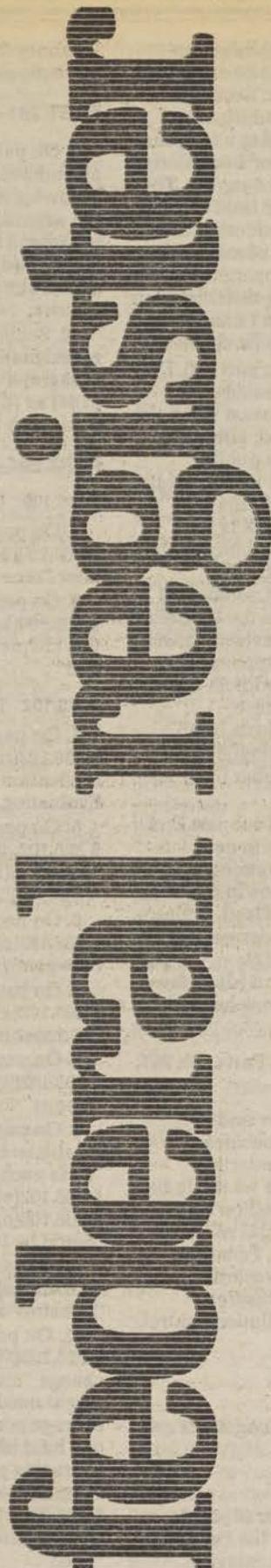
CONTACT PERSON FOR MORE INFO: Jean Ellen (202) 653-5629/(202) 708-9300 for TDD Relay 1-800-877-8339 for Toll Free.

Jean H. Ellen,
Agenda Clerk.

[FR Doc. 91-17145 Filed 7-15-91; 3:39 pm]

BILLING CODE 6735-01-M

Wednesday
July 17, 1991



Part II

**Environmental
Protection Agency**

40 CFR Parts 260, et al.

**Burning of Hazardous Waste in Boilers
and Industrial Furnaces; Final Rule**

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 264, 265, 266, 270, and 271

[EPA/OSW-FR-91-SWH-FRL-39689]

Burning of Hazardous Waste in Boilers and Industrial Furnaces

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule: corrections; technical amendments.

SUMMARY: On February 21, 1991, the Environmental Protection Agency (EPA) published a final rule to regulate air emissions from the burning of hazardous waste in boilers and industrial furnaces (56 FR 7134). Today's notice corrects typographical and editorial errors that appeared in the regulatory text, including corrections to appendices II and III, and adds two appendices, appendix IX and appendix X, to part 266. Appendices IX and X were not ready at the time of publication; therefore, a note was placed in the appropriate location in the rule to inform readers that these appendices were to be published at a later date. Copies of these appendices were, however, made available to the public through the RCRA Docket maintained at EPA and through the National Technical Information Service (NTIS).

EFFECTIVE DATE: The effective date of the rule remains August 21, 1991.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424-9346 (toll-free) or (703) 920-9810. For more specific aspects of the final rule, contact Shiva Garg, Office of Solid Waste (OS-322), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 (703) 308-8460.

SUPPLEMENTARY INFORMATION: On February 21, 1991, EPA promulgated a rule regulating the burning of hazardous waste in boilers and industrial furnaces (56 FR 7134). Based upon EPA's review of the notice, and comments received from the public, a number of editorial and typographical errors were found. This notice corrects errors, found in the rule.¹

In addition, appendices II and III to part 266 are being revised to address a number of problems that were identified by the Agency. First, the title of appendix II is being renamed because the use of words total chlorine and

chloride in the title (as published on February 21) is duplicative because total chlorine includes chloride. Second, the values in appendices II and III were erroneously calculated using a reference air concentration (RAC) for free chlorine of 0.04 µg/m³ instead of 0.4 µg/m³. This resulted in Tier I limits for total chlorine and Tier II limits for free chlorine that were too low by an order of magnitude. Third, the units used in appendices II and III were inadvertently different than the units used in appendix I and are being converted to g/hr to be consistent.

Also, two appendices to part 266, IX and X, are being added because they were not ready for publication when the final rule was promulgated, although they were available to the public through the RCRA Docket and through the National Technical Information Service (NTIS). Appendix IX is the Methods Manual for Compliance with the BIF Regulations, U.S. EPA, December 1990, document number PB 91-120-006. Appendix X is the Guideline on Air Quality Models (Revised) (1986), U.S. EPA, and includes Supplement A (1987); document numbers PB 86-245-248 and PB 88-150-958. These documents are available from NTIS, 5285 Port Royal Road, Springfield, Virginia 22161, phone number (703) 487-4600.

Finally, the rule deleted subpart D of part 266 and replaced it with new subpart H. However, references to subpart D at other locations in the CFR were inadvertently not revised. Today's notice makes conforming corrections at four locations: §§ 261.6(a)(2), 261.6(a)(2)(ii), 266.40 (c) and (d). A few other conforming corrections have also been made.

List of Subjects in 40 CFR Parts 260, 261, 264, 265, 266, 270, and 271

Administrative practices and procedures, Confidential business information, Hazardous materials transportation, Hazardous waste, Indian lands, Insurance, Incorporation by reference, Intergovernmental relations, Packaging and containers, Penalties, Recycling, Reporting and recordkeeping requirements, Security measures, Security bonds, Water pollution control, Water supply.

Dated: June 24, 1991.

Don R. Clay,

Assistant Administrator for Solid Waste and Emergency Response.

A. Technical Corrections

In rule document number 91-2667, beginning on page 7134 in the *Federal Register* published on Thursday,

February 21, 1991, make the following corrections:

PART 261—[AMENDED]

1. On page 7206, third column, in amendment 2 to part 261, add the following at the beginning of line 3 of the amendatory language of § 261.2: "paragraph (d)(3) as (d)(4) and paragraph (d)(4) as (d)(5)". The corrected amendatory language will read as follows:

"2. Section 261.2 is amended by redesignating paragraph (d)(2) as (d)(3), paragraph (d)(3) as (d)(4), and paragraph (d)(4) as (d)(5), and adding a new paragraph (d)(2) to read as follows:"

PART 266—[AMENDED]

§ 266.100 [Corrected]

2. On page 7208, second column, in § 266.100(b)(2), line 3, replace the period after "recovery" with a semicolon.

3. On page 7208, second column, in § 266.100(b)(3), line 7, change "§ 261.5 of this chapter." to "§ 261.5 of this chapter; and".

§ 266.102 [Corrected]

4. On page 7209, second column, in § 266.102(b)(1), line 12, change "for the Evaluation of Solid Waste" to "for Evaluating Solid Waste".

5. On page 7210, first column, in § 266.102, the paragraph designated as "(d)(4)(iii)(D)" should be designated as "(d)(4)(iv)".

6. On page 7210, third column, in § 266.102(e)(4)(i)(C), line 1, insert "A" between "(C)" and "sampling".

7. On page 7211, second column, in § 266.102(e)(6) heading, line 1, change "paramenters" to "parameters".

8. On page 7211, third column, in § 266.102(e)(6)(i)(B)(1)(ii), line 2, change "means" to "mean".

9. On page 7211, third column, at two locations: In lines 30 and 59, the number "2" in each subparagraph (2) heading of § 266.102(e)(6)(i)(B) and § 266.102(e)(6)(ii)(B), respectively, should be italicized.

10. On page 7211, third column, in § 266.102(e)(6)(ii), line 10, change "opeator" to "operator".

11. On page 7211, third column, in § 266.102(e)(6)(ii)(B)(2), lines 3 and 4, change "arithmetic mean of the most recent one hour block average for the average period" to "arithmetic mean of one hour block averages for the averaging period".

12. On page 7212, first column, in § 266.102(e)(6)(iv)(B), line 15, delete the comma between "§ 266.106(f)" and "need".

¹ The Agency expects to promulgate another technical corrections notice later this summer that addresses other concerns identified since the promulgation of the rule on February 21, 1991.

§ 266.103 [Corrected]

13. On page 7213, first column, in § 266.103(a)(1)(ii), line 7, insert "or" between "burn" and "to".
14. On page 7214, first column, in § 266.103(b)(2)(ii)(A), line 4, insert "and" between "silver" and "thallium".
15. On page 7214, first column, in § 266.103(b)(2)(ii)(B), line 3, the reference to "(b)(ii)(A)" should read "(b)(2)(ii)(A)".
16. On page 7214, first column, in § 266.103(b)(2)(ii)(D), line 4, the reference to "(b)(ii)(B) or (b)(ii)(C)" should read "(b)(2)(ii)(B) or (b)(2)(ii)(C)".
17. On page 7214, second column, line 3, in § 266.103(b)(2)(iv), change "particulate" to "particulate".
18. On page 7214, second column, in § 266.103(b)(2)(v)(A)(5), line 2, change "equivalent" to "equivalent".
19. On page 7214, second column, in § 266.103(b)(2)(v)(A)(5), line 4, replace the period after "facility" with a semicolon.
20. On page 7214, second column, in § 266.103(b)(2)(vi), line 3, change "HC1" to "HCl".
21. On page 7214, third column, in § 266.103(b)(3)(ii), line 2, replace the semicolon after "streams" with a colon.
22. On page 7215, first column, in § 266.103(b)(5)(ii)(B), line 1, change "meat" to "meet".
23. On page 7215, first column, at two locations: in lines 38 and 66, the number "1" in each subparagraph (1) heading of § 266.103(b)(5)(i)(B) and § 266.103(b)(5)(ii)(B), respectively, should be italicized.
24. On page 7215, first column, line 46, the number "2" in the subparagraph (2) heading of § 266.103(b)(5)(i)(B) should be italicized.
25. On page 7215, second column, line 4, the number "2" in the subparagraph (2) heading of § 266.103(b)(5)(ii)(B) should be italicized.
26. On page 7215, second column, in § 266.103(b)(5)(ii)(B)(2), line 3 and 4, change "arithmetic mean of the most recent one hour block averages" to "arithmetic mean of one hour block averages".
27. On page 7215, second column, in § 266.103(b)(6) introductory text, lines 2 and 3, change "[the effective date of this rule]" to "August 21, 1991".
28. On page 7216, first column, in § 266.103(c), lines 1 and 2, delete "On or before August 21, 1992", capitalize the "t" in "the", and insert "on or before August 21, 1992" in line 12 between "Director" and "a".
29. On page 7216, first column, in § 266.103(c)(1), line 10, add "and all applicable emissions standards" after "limits".

30. On page 7216, second column, in § 266.103(c)(1)(iv), line 3, change "light-weighted" to "light-weight".

31. On page 7216, second column, in § 266.103(c)(1)(ix), line 8, replace the semicolon after "(e)" with a colon.

32. On page 7216, third column, in § 266.103(c)(1)(xi), lines 1, change "system" to "systems", and in line 7, replace the semicolon after "(e)" with a colon.

33. On page 7216, third column, in § 266.103(c)(1)(xii), line 8, replace the semicolon after "(e)" with a colon.

34. On page 7217, third column, in § 266.103(c)(4)(i)(C), line 2, change "test" to "testing".

35. On page 7217, third column, in § 266.103(c)(4)(i)(B)(5), line 3, change "average" to "average".

36. On page 7218, second column, in § 266.103(c)(4)(iv)(C)(2)(ii), lines 3 and 4, change "the arithmetic mean of the most recent one hour block averages for the averaging period" to "arithmetic mean of one hour block averages for the averaging period".

37. On page 7218, third column, in § 266.103(c)(7)(i)(A), line 3, change "(1)" (one) to "(1)" (lower case "el").

38. On page 7218, third column, in § 266.103(c)(7)(i)(B), delete the last word "to" in line 1 and replace by "only for purposes of compliance testing (and pretesting to prepare for compliance testing)".

39. On page 7219, first column, in § 266.103(c)(7)(i)(B)(1)(ii), line 7, insert a period after "HCl/Cl₂".

40. On page 7219, first column, line 18, the number "2" in the subparagraph (2) heading of § 266.103(c)(7)(ii)(B) should be italicized.

41. On page 7219, third column, in § 266.103(g)(1), line 1, change "or" to "of".

§ 266.104 [Corrected]

42. On page 7220, second column, in § 266.104(a)(1), change the equation:

$$\text{DRE} = \left[\frac{1 - W_{\text{out}}}{W_{\text{in}}} \right] \times 100$$

to:

$$\text{DRE} = \left[1 - \frac{W_{\text{out}}}{W_{\text{in}}} \right] \times 100$$

43. On page 7220, third column, in § 266.104(a)(3), in line 12, change "tetra-" to "tetra-", and in line 16, the reference to "paragraph (a)" should read "paragraph (a)(1)".

44. On page 7220, third column, in § 266.104(b)(2), lines 5 through 7, change

"in Hazardous Waste Incinerators, Boilers, and Industrial Furnaces" to "for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste".

45. On page 7221, first column, in § 266.104(c)(3), lines 3 through 6, change "Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers and Industrial Furnaces" to "Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste"; and in line 7, insert "and" between "CO" and "oxygen".

46. On page 7221, second column, line 3, in § 266.104(e)(1), insert "(PCDDs)" after "Dibenzo-p-Dioxins", and in line 6, replace the period at the end of the sentence after "part" with a semicolon.

47. On page 7221, second column, in § 266.104(e)(2), line 13, replace the period at the end of the sentence after "TCDD" with a semicolon.

48. On page 7221, second column, in § 266.104(e)(4), line 6, insert a before "2.2".

49. On page 7221, third column, in § 266.104(f)(3)(iii), line 4, change "conducts" to "conduct".

50. On page 7222, first column, the paragraph designated as "(g)2." of § 266.104, should be designated as "(g)(2)".

§ 266.106 [Corrected]

51. On page 7222, second column, in § 266.106(a), line 9, change "for Evaluation Solid Waste" to "for Evaluating Solid Waste".

52. On page 7222, third column, in the equation after line 3, in § 266.106(b)(2)(i), change "<1.0" to "≤1.0", and change "n = number of carcinogenic metals" to "n = number of carcinogenic metals".

53. On page 7222, third column, in § 266.106(b)(2)(ii)(B), line 2, insert "as defined in § 266.102(e)(6)(ii)" between "hours" and "with".

54. On page 7222, third column, in § 266.106(b)(5), line 7, insert "shall be used" at the end of the sentence before the period.

55. On page 7223, first column, in § 266.106(b)(6), in the equation after line 15, change lines 5 and 6 of the equation that read "K=physical stack height (meters); K=stack gas flow rate (m³/second); and" to read: "H=physical stack height (meters); V=stack gas flow rate (m³/second); and".

56. On page 7223, second column, in § 266.106(c)(2), in the equation after line 12, delete the minus sign after "AER(i)".

57. On page 7223, third column, the equation in § 266.106(d)(3) is revised to read as below:

n	Predicted Ambient Concentration _(i)	
Σ		≤ 1.0
i=1	Risk-Specific Dose _(j)	

58. On page 7224, first column, in § 266.106(e), in line 8, change "each" to "a", and in line 10, change "levels" to "level".

59. On page 7224, first column, in § 266.106(f)(2)(ii) introductory text, delete the semicolon after "metal".

60. On page 7224, second column, line 3, in § 266.106(f)(2)(ii)(B), change "ratio" to "ratios".

§ 266.107 [Corrected]

61. On page 7224, second column, in § 266.107(a), line 4, change "provided by paragraphs (b), (c), or (d) of" to "provided by paragraph (b) or (c) of".

62. On page 7224, third column, in § 266.107(b)(2) heading, line 1, change "screen" to "screening".

63. On page 7224, third column, in § 266.107(b)(3), line 9, change "screen" to "screening".

64. On page 7225, first column, in § 266.107(d), change the paragraphs designated as "(i)" and "(ii)" to "(1)" and "(2)".

65. On page 7225, first column, in § 266.107(e), in line 3, insert "limit" between "screening" and "provided".

and in line 4, the reference to "Appendix I" should read "Appendix II".

66. On page 7225, first column, in § 266.107(h), line 5, change "his" to "this".

§ 266.108 [Corrected]

67. On page 7225, first column, in § 266.108(a), in the heading, line 1, change "Exemption" to "Exempt", and in the introductory text, line 5, change "section" to "subpart".

68. On page 7225, second column, first column of the table entitled "Exempt Quantities for Small Quantity Burner Exemption" in § 266.108(a)(1), insert "to" between "10.0" and "11.9".

69. On page 7225, second column, in § 266.108(c), in the equation after line 7, change " <1.0 " to " ≤ 1.0 ", and in the line after the equation that reads "Allowable Quantity Burned, means the", delete the comma after "Burned".

§ 266.109 [Corrected]

70. On page 7225, third column, in § 266.109(a)(1)(i), in line 4, change "of" to "on", and in line 8, delete the apostrophe after "fuel" and replace it with an end quotation mark.

71. On page 7226, first column, in § 266.109(a)(2)(iv) introductory text, line 3, change the reference to "(a)(iii)" to "(a)(2)(iii)".

72. On page 7226, first column, in § 266.109(a)(2)(iv)(A), line 2, change "componds" to "compounds".

73. On page 7226, first column, in § 266.109(b)(2), line 2, add "or adjusted Tier I" between "I" and "metals".

§ 266.110 [Corrected]

74. On page 7226, third column, line 4, in § 266.110(f)(3), insert "the" between "of" and "fuel".

75. On page 7227, third column, line 11, "§ 266.122" should correctly be designated as "§ 266.112".

Part 266, Appendix I [Amended]

76. On page 7228, in appendix I to part 266, in the title for Table I-A, change "Carcinogenic" to "Noncarcinogenic".

77. On page 7230, in appendix I to part 266, Table I-D: under "Values for use in rural areas", the first column "Beryllium" is moved so that it appears as the fifth column under "Values for use in urban areas". Also under "Values for use in urban areas", in second column under "Arsenic g/hr", change "9.6E+01" corresponding to a terrain adjusted eff. stack ht. of 16 meters to "9.6E-01".

78. On page 7230, in appendix I to part 266, Table I-E, in column 2, change "4.3-01" corresponding to "Terrain adjusted eff. stack ht. (m)" of 12 meters in the first column to "4.3E-01".

79. On page 7231, appendix II to part 266 is corrected to read as follows:

APPENDIX II.—TIER I FEED RATE SCREENING LIMITS FOR TOTAL CHLORINE

Terrain-adjusted effective stack height (m)	Noncomplex Terrain		Complex Terrain (g/hr)
	Urban (g/hr)	Rural (g/hr)	
4	8.2E+01	4.2E+01	1.9E+01
6	9.1E+01	4.8E+01	2.8E+01
8	1.0E+02	5.3E+01	4.1E+01
10	1.2E+02	6.2E+01	5.8E+01
12	1.3E+02	7.7E+01	7.2E+01
14	1.5E+02	9.1E+01	9.1E+01
16	1.7E+02	1.2E+02	1.1E+02
18	1.9E+02	1.4E+02	1.2E+02
20	2.1E+02	1.8E+02	1.3E+02
22	2.4E+02	2.3E+02	1.4E+02
24	2.7E+02	2.9E+02	1.6E+02
26	3.1E+02	3.7E+02	1.7E+02
28	3.5E+02	4.7E+02	1.9E+02
30	3.9E+02	5.8E+02	2.1E+02
35	5.3E+02	9.6E+02	2.6E+02
40	6.2E+02	1.4E+03	3.3E+02
45	8.2E+02	2.0E+03	4.0E+02
50	1.1E+03	2.6E+03	4.8E+02
55	1.3E+03	3.5E+03	6.2E+02
60	1.6E+03	4.6E+03	7.7E+02
65	2.0E+03	6.2E+03	9.1E+02
70	2.3E+03	7.2E+03	1.1E+03
75	2.5E+03	8.6E+03	1.2E+03
80	2.9E+03	1.0E+04	1.3E+03
85	3.3E+03	1.2E+04	1.4E+03
90	3.7E+03	1.4E+04	1.6E+03
95	4.2E+03	1.7E+04	1.8E+03
100	4.8E+03	2.1E+04	2.0E+03
105	5.3E+03	2.4E+04	2.3E+03
110	6.2E+03	2.9E+04	2.5E+03

APPENDIX II.—TIER I FEED RATE SCREENING LIMITS FOR TOTAL CHLORINE—Continued

Terrain-adjusted effective stack height (m)	Noncomplex Terrain		Complex Terrain (g/hr)
	Urban (g/hr)	Rural (g/hr)	
115.....	7.2E+03	3.5E+04	2.8E+03
120.....	8.2E+03	4.1E+04	3.2E+03

80. On pages 7231 and 7232, appendix III to part 266 is corrected to read as follows:

APPENDIX III.—Tier II Emission Rate Screening Limits for Free Chlorine and Hydrogen Chloride

Terrain-adjusted effective stack height (m)	Noncomplex terrain				Complex terrain	
	Values for urban areas		Values for rural areas		Values for use in urban and rural areas	
	C1 ₂ (g/hr)	HC1 (g/hr)	C1 ₂ (g/hr)	HC1 (g/hr)	C1 ₂ (g/hr)	HC1 (g/hr)
4.....	8.2E+01	1.4E+03	4.2E+01	7.3E+02	1.9E+01	3.3E+02
6.....	9.1E+01	1.6E+03	4.8E+01	8.3E+02	2.8E+01	4.9E+02
8.....	1.0E+02	1.8E+03	5.3E+01	9.2E+02	4.1E+01	7.1E+02
10.....	1.2E+02	2.0E+03	6.2E+01	1.1E+03	5.8E+01	1.0E+03
12.....	1.3E+02	2.3E+03	7.7E+01	1.3E+03	7.2E+01	1.3E+03
14.....	1.5E+02	2.6E+03	9.1E+01	1.6E+03	9.1E+01	1.6E+03
16.....	1.7E+02	2.9E+03	1.2E+02	2.0E+03	1.1E+02	1.8E+03
18.....	1.9E+02	3.3E+03	1.4E+02	2.5E+03	1.2E+02	2.0E+03
20.....	2.1E+02	3.7E+03	1.8E+02	3.1E+03	1.3E+02	2.3E+03
22.....	2.4E+02	4.2E+03	2.3E+02	3.9E+03	1.4E+02	2.4E+03
24.....	2.7E+02	4.8E+03	2.9E+02	5.0E+03	1.6E+02	2.8E+03
26.....	3.1E+02	5.4E+03	3.7E+02	6.5E+03	1.7E+02	3.0E+03
28.....	3.5E+02	6.0E+03	4.7E+02	8.1E+03	1.9E+02	3.4E+03
30.....	3.9E+02	6.9E+03	5.6E+02	1.0E+04	2.1E+02	3.7E+03
35.....	5.3E+02	9.2E+03	9.6E+02	1.7E+04	2.6E+02	4.6E+03
40.....	6.2E+02	1.1E+04	1.4E+03	2.5E+04	3.3E+02	5.7E+03
45.....	8.2E+02	1.4E+04	2.0E+03	3.5E+04	4.0E+02	7.0E+03
50.....	1.1E+03	1.8E+04	2.6E+03	4.6E+04	4.8E+02	8.4E+03
55.....	1.3E+03	2.3E+04	3.5E+03	6.1E+04	6.2E+02	1.1E+04
60.....	1.6E+03	2.9E+04	4.6E+03	8.1E+04	7.7E+02	1.3E+04
65.....	2.0E+03	3.4E+04	6.2E+03	1.1E+05	9.1E+02	1.6E+04
70.....	2.3E+03	3.9E+04	7.2E+03	1.3E+05	1.1E+03	1.8E+04
75.....	2.5E+03	4.5E+04	8.6E+03	1.5E+05	1.2E+03	2.0E+04
80.....	2.9E+03	5.0E+04	1.0E+04	1.8E+05	1.3E+03	2.3E+04
85.....	3.3E+03	5.8E+04	1.2E+04	2.2E+05	1.4E+03	2.5E+04
90.....	3.7E+03	6.6E+04	1.4E+04	2.5E+05	1.6E+03	2.9E+04
95.....	4.2E+03	7.4E+04	1.7E+04	3.0E+05	1.8E+03	3.2E+04
100.....	4.8E+03	8.4E+04	2.1E+04	3.6E+05	2.0E+03	3.5E+04
105.....	5.3E+03	9.2E+04	2.4E+04	4.3E+05	2.3E+03	3.9E+04
110.....	6.2E+03	1.1E+05	2.9E+04	5.1E+05	2.5E+03	4.5E+04
115.....	7.2E+03	1.3E+05	3.5E+04	6.1E+05	2.8E+03	5.0E+04
120.....	8.2E+03	1.4E+05	4.1E+04	7.2E+05	3.2E+03	5.6E+04

Part 266, Appendix IV [Amended]

81. On page 7232, in appendix IV to part 266, first column of the table, change "Methyl Ethyl Ketone" to "Methyl Ethyl Ketone", and in line 34, change "Methyl Parathion" to "Methyl Parathion".

Part 266, Appendix VII [Amended]

82. On page 7234, first column, in appendix VII to part 266, in the table entitled "Metals—TCLP Extract Concentration Limits"; in the heading in the third column of the table, replace "Concentration limits (mg/kg)" with "Concentration limits (mg/L)"; and add the following at the end of the table:

Thallium | 7440-28-0 | 7×E+00

83. On page 7234, third column, in appendix VII to part 266, in the table entitled "Nonmetals—Residue Concentration Limits—Continued", delete 8 lines beginning with "Thallium" and ending with "Thallium(I) sulfate.

Part 266, Appendix VIII [Amended]

84. On page 7235, in appendix VIII to part 266, first column of the table entitled "PICS Found in Stack Effluents", change "roform" to "chloroform" and "robenzene" to "chlorobenzene".

PART 270—[AMENDED]

§ 270.22 [Corrected]

85. On page 7235, second column, in § 270.22(a)(2)(ii)(B), line 12, change "Test Methods for the Evaluation of" to "Test Methods for Evaluating".

86. On page 7235, second column, in § 270.22(a)(2)(ii)(C), line 5, the reference to "(a)(1)(ii)(B)" should read "(a)(2)(ii)(B)".

87. On page 7236, first column, in § 270.22(a)(5)(vii), line 4, change "feestocks" to "feedstocks".

88. On page 7236, first column, in § 270.22(a)(6), line 1, change "trail" to "trial".

89. On page 7236, second column, in § 270.22(a)(6), line 8, change "from from" to "from" i.e. delete one "from" as it is duplicative.

90. On page 7236, second column, in § 270.22(b)(1), line 2, change "minimze" to "minimize".

§ 270.42 [Corrected]

91. On page 7237, first column, in § 270.42(g)(1) introductory text, line 3, change "wates" to "wastes".

92. On page 7237, first column, in § 270.42(g)(1)(i), line 5, change "effetive" to "effective".

93. On page 7237, second column, in § 270.42(g)(1)(iv), in lines 1 and 2, delete "In the case of Classes 2 and 3 modifications"; in line 2, capitalize the "t" in "the"; and insert "Class 2 or 3" between "complete" and "modification" so that paragraph (iv) reads as follows: "The permittee also submits a complete Class 2 or 3 modification request within 180 days of the effective date of the rule listing or identifying the waste, or subjecting the unit to RCRA Subtitle C management standards;".

94. On page 7237, in appendix I to § 270.42, in line 1 of "L.5.", replace the period after "requirements" with a colon.

95. On page 7237, third column, in amendment 4 to part 270, the amendatory language is corrected to read as follows: "4. In § 270.42, appendix I is amended by revising the heading of L and items 1 through 4, 5a, 6, 7b, and 8 to read as follows:"

§ 270.66 [Corrected]

96. On page 7237, third column, line 2, in § 270.66(b)(1), change "operation" to "operational".

97. On page 7238, second column, in § 270.66(b)(4), line 8, change "107" to "266.107".

98. On page 7238, at two locations, lines 13, 14, and 15, in § 270.66(c)(2)(i) and in lines 5 and 6 in § 270.66(c)(2)(ii), change "Test Methods for the Evaluation of Solid Waste" to "Test Methods for Evaluating Solid Waste".

99. On page 7238, third column, in § 270.66(c)(3)(vi), line 3, delete "and".

100. On page 7238, third column, in § 270.66(c)(3)(vii), line 1, insert "air" between "any" and "pollution".

101. On page 7239, second column, in § 270.66(f)(3), line 10, replace the period after "standard" with a semicolon.

102. On page 7239, second column, in § 270.66(f)(8), line 5, change "is" to "in".

§ 270.33 [Corrected]

103. On page 7239, third column, in § 270.73 at two locations, in paragraph (f), line 2, and in paragraph (g), line 3, change "as" to "has".

104. On page 7240, in § 271.1(j), Table 1, third column, replace "[insert FR page numbers]" with "56 FR 7134-7240".

B. Technical Amendments

For the reasons set out in the preamble, 40 CFR part 261 is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

§ 261.3 [Amended]

2. In § 261.3(c)(2)(ii)(8), line 3 is amended by replacing "by § 261.6(a)(3)(v) through (ix)" with "by § 261.6(a)(3)(v) through (viii)".

§ 261.6 [Amended]

3. In § 261.6(a)(2), line 4, the letter "G" is amended to read "H". The entire line should now read as: "subparts C through H of part 266 of".

4. In § 261.6(a)(2)(ii), line 5, the reference to "subpart D" should be replaced by "subpart H".

For the reasons set out in the preamble, 40 CFR part 265 is amended as follows:

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, 6935.

§ 265.370 [Amended]

2. § 265.370 is amended by deleting the period (.) at the end and replacing it with the following: ", and subpart H of part 266, if the unit is a boiler or an industrial furnace as defined in § 260.10."

For the reasons set out in the preamble, 40 CFR part 270 is amended as follows:

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

1. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, 6974.

§ 270.1 [Amended]

2. § 270.1(b) is amended by replacing "40 CFR part 265" in line 44 by "40 CFR parts 265 and 266".

§ 270.42 [Amended]

3. Section 270.42(c)(1)(iv) is revised to read as follows:

(c) * * *

(1) * * *

(iv) Provides the applicable information required by 40 CFR 270.13 through 270.22, 270.62, 270.63, and 270.66.

* * * * *

For the reasons set out in the preamble, 40 CFR part 266 is amended as follows:

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

1. The authority citation for part 266 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3004, and 3014 of the Solid Waste Disposal Act, as amended (42 U.S.C. 6905, 6912(a), 6924, and 6934).

§ 266.4 [Amended]

2. Section 266.40(c) is amended by replacing "subpart D" in line 8 by "subpart H".

3. Section 266.40(d) is amended by replacing "subpart D" in line 4 by "subpart H".

4. Part 266 is amended by adding two appendices, appendices IX and X as follows:

Appendix IX to Part 266—Methods Manual for Compliance With the BIF Regulations

Burning Hazardous Waste in Boilers and Industrial Furnaces

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 - 2.1 Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste
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- 3.0 Sampling and Analytical Methods
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Appendix A—Statistics

Section 1.0 INTRODUCTION

This document presents required methods for demonstrating compliance with U.S. Environmental Protection Agency regulations for boilers and industrial furnaces (BIFs) burning hazardous waste (see 40 CFR part 266, subpart H). Included in this document are:

1. Performance Specifications for Continuous Emission Monitoring (CEM) of Carbon Monoxide, Oxygen, and Hydrocarbons in Stack Gases.
2. Sampling and Analytical (S&A) Methods for Multiple Metals, Hexavalent Chromium, HCl and Chlorine, Polychlorinated Dibenzo-p-dioxins and Dibenzofurans, and Aldehydes and Ketones.
3. Procedures for Estimating the Toxicity Equivalency of Chlorinated Dibenzo-p-dioxin and Dibenzofuran Congeners.
4. Hazardous Waste Combustion Air Quality Screening Procedures (HWCAQSP).
5. Simplified Land Use Classification Procedure for Compliance with Tier I and Tier II Limits.

- 6. Statistical Methodology for Bevill Residue Determinations.
- 7. Procedures for Determining Default Values for Air Pollution Control System Removal Efficiencies.
- 8. Procedures for Determining Default Values for Partitioning of Metals, Ash, and Total Chloride/Chlorine.
- 9. Alternate Methodology for Implementing Metals Controls.

Additional methods referenced in subpart H of part 266 but not included in this document can be found in 40 CFR parts 60 and 61, and "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846).

The CEM performance specifications of section 2.0, the S&A methods of section 3.0 and the toxicity equivalency procedure for dioxins and furans of section 4.0 are required procedures for determining compliance with BIF regulations. The CEM performance specifications and the S&A methods are interim. The finalized CEM performance specifications and methods will be published in SW-846 or 40 CFR parts 60 and 61.

SECTION 2.0 PERFORMANCE SPECIFICATIONS FOR CONTINUOUS EMISSION MONITORING SYSTEMS

2.1 Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste

2.1.1 Applicability and Principle

2.1.1.1 Applicability. These performance specifications apply to carbon monoxide (CO) and oxygen (O₂) continuous emission monitoring systems (CEMSs) installed on incinerators, boilers, and industrial furnaces burning hazardous waste. The specifications include procedures which are intended to be used to evaluate the acceptability of the CEMS at the time of its installation or whenever specified in regulations or permits. The procedures are not designed to evaluate CEMS performance over an extended period of time. The source owner or operator is responsible for the proper calibration, maintenance, and operation of the CEMS at all times.

2.1.1.2 Principle. Installation and measurement location specifications, performance and equipment specifications, test and data reduction procedures, and brief quality assurance guidelines are included in the specifications. Calibration drift, relative accuracy, calibration error, and response time tests are conducted to determine conformance of the CEMS with the specifications.

2.1.2 Definitions

2.1.2.1 Continuous Emission Monitoring System (CEMS). A continuous monitor is one in which the sample to be analyzed passes the measurement section of the analyzer without interruption, and which evaluates the detector response to the sample at least once each 15 seconds and computes and records the results at least every 60 seconds. A CEMS consists of all the equipment used to acquire data and includes the sample extraction and transport hardware, the analyzer(s), and the

data recording/processing hardware and software.

2.1.2.2 Monitoring System Types. The specifications require CEMSs capable of accepting calibration gases. Alternative system designs may be used if approved by the Regional Administrator. There are two basic types of monitoring systems: extractive and in-situ.

2.1.2.2.1 Extractive. Systems that use a pump or other mechanical, pneumatic, or hydraulic means to draw a sample of the stack or flue gas and convey it to a remotely located analyzer.

2.1.2.2.2 In-situ. Systems that perform an analysis without removing a sample from the stack. Point in-situ analyzers place the sensing or detecting element directly in the flue gas stream. Cross-stack in-situ analyzers measure the parameter of interest by placing a source beam on one side of the stack and the detector (in single-pass instruments) or a retroreflector (in double-pass instruments) on the other side, and measuring the parameter of interest (e.g., CO) by the attenuation of the beam by the gas in its path.

2.1.2.3 Instrument Measurement Range. The difference between the minimum and maximum concentration that can be measured by a specific instrument. The minimum is often stated or assumed to be zero and the range expressed only as the maximum.

2.1.2.4 Span or Span Value. Full scale instrument measurement range.

2.1.2.5 Calibration Drift (CD). The difference in the CEMS output readings from the established reference value after a stated period of operation during which no unscheduled maintenance, repair, or adjustment takes place. A CD test is performed to demonstrate the stability of the CEMS calibration over time.

2.1.2.6 Response Time. The time interval between the start of a step change in the system input (e.g., change of calibration gas) and the time when the data recorder displays 95 percent of the final value.

2.1.2.7 Accuracy. A measure of agreement between a measured value and an accepted or true value, expressed as the percentage difference between the true and measured values relative to the true value. For these performance specifications, accuracy is checked by conducting a calibration error (CE) test and a relative accuracy (RA) test. Certain facilities, such as those using solid waste or batch-fed processes, may observe long periods of almost no CO emissions with brief, high-level CO emission spikes. These facilities, as well as facilities whose CO emissions never exceed 5–10 ppm, may need to be exempted from the RA requirement because the RA test procedure cannot ensure acquisition of meaningful test results under these conditions. An alternative procedure for accuracy determination is described in section 2.1.9.

2.1.2.8 Calibration Error (CE). The difference between the concentration indicated by the CEMS and the known concentration of the cylinder gas. A CE test procedure is performed to document the accuracy and linearity of the monitoring

equipment over the entire measurement range.

2.1.2.9 Relative Accuracy (RA). A comparison of the CEMS response to a value measured by a performance test method (PTM). The PA test is used to validate the calibration technique and verify the ability of the CEMS to provide representative and accurate measurements.

2.1.2.10 Performance Test Method (PTM). The sampling and analysis procedure used to obtain reference measurements for comparison to CEMS measurements. The applicable test methods are Method 10, 10A, or 10B (for the determination of CO) and Method 3 or 3A (for the determination of O₂). These methods are found in 40 CFR part 60, appendix A.

2.1.2.11 Performance Specification Test (PST) Period. The period during which CD, CE, response time, and RA tests are conducted.

2.1.2.12 Centroidal Area. A concentric area that is geometrically similar to the stack or duct cross section and is no greater than 1 percent of the stack or duct cross-sectional area.

2.1.3 Installation and Measurement Location Specifications

2.1.3.1 CEMS Installation and Measurement Locations. The CEMS shall be installed in a location in which measurements representative of the source's emissions can be obtained. The optimum location of the sample interface for the CEMS is determined by a number of factors, including ease of access for calibration and maintenance, the degree to which sample conditioning will be required, the degree to which it represents total emissions, and the degree to which it represents the combustion situation in the firebox. The location should be as free from in-leakage influences as possible and reasonably free from severe flow disturbances. The sample location should be at least two equivalent duct diameters downstream from the nearest control device, point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate occurs and at least 0.5 diameter upstream from the exhaust or control device. The equivalent duct diameter is calculated as per 40 CFR part 60, appendix A, method 1, section 2.1. If these criteria are not achievable or if the location is otherwise less than optimum, the possibility of stratification should be checked as described in Section 2.1.3.3 to determine whether the location would cause failure of the relative accuracy test.

2.1.3.1.1 For extractive or point in-situ CEMSSs, the measurement point should be within or centrally located over the centroidal area of the stack or duct cross section.

2.1.3.1.2 For cross-stack CEMSSs, the effective measurement path should (1) have at least 70 percent of the path within the inner 50 percent of the stack or duct cross-sectional area or (2) be centrally located over any part of the centroidal area.

2.1.3.1.3 Both the CO and O₂ monitors should be installed at the same general location. If this is not possible, they may be installed at different locations if the effluent

gases at both sample locations are not stratified and there is no in-leakage of air between sampling locations.

2.1.3.2 Performance Test Method (PTM) Measurement Location and Traverse Points.

2.1.3.2.1 Select an accessible PTM measurement point at least two equivalent diameters downstream from the nearest control device, the point of CO generation, or other point at which a change in the CO concentration may occur, and at least a half equivalent diameter upstream from the effluent exhaust or control device. When pollutant concentration changes are due solely to diluent leakage (e.g., air heater leakages) and CO and O₂ are simultaneously measured at the same location, one half diameter may be used in place of two equivalent diameters. The CEMS and PTM locations need not be the same.

2.1.3.2.2 Select traverse points that ensure acquisition of representative samples over the stack or duct cross section. At a minimum, establish a measurement line that passes through the centroidal area in the direction of any expected stratification. If this line interferes with the CEMS measurements, displace the line up to 30 cm (or 5 percent of the equivalent diameter of the cross section, whichever is less) from the centroidal area. Locate three traverse points at 17, 50, and 83 percent of the measurement line. If the measurement line is no longer than 2.4 meters and pollutant stratification is not expected, the tester may choose to locate the three traverse points on the line at 0.4, 1.2, and 2.0 meters from the stack or duct wall. This option must not be used at a site located within eight equivalent diameters downstream of a flow disturbance. The tester may select other traverse points, provided that they can be shown to the satisfaction of the Administrator to provide a representative sample over the stack or duct cross-section. Conduct all necessary PTM tests within 3 cm of the selected traverse points. Sampling must not be performed within 3 cm of the duct or stack inner wall.

2.1.3.3 Stratification Test Procedure. Stratification is defined as a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall. To determine whether effluent stratification exists, a dual probe system should be used to determine the average effluent concentration while measurements at each traverse point are being made. One probe, located at the stack or duct centroid, is used as a stationary reference point to indicate the change in effluent concentration over time. The second probe is used for sampling at the traverse points specified in method 1, appendix A, 40 CFR part 60. The monitoring system samples sequentially at the reference and traverse points throughout the testing period for five minutes at each point.

2.1.4 CEMS Performance and Equipment Specifications

Table 2.1-1 summarizes the performance specifications for the CEMSSs. Two sets of standards for CO are given; one for low-range and another for high-range measurements. The high-range specifications relate to measurement and quantification of

short duration high concentration peaks, while the low-range specifications relate to the overall average operating condition of the burning device. The dual-range specifications can be met by using (1) one analyzer for each range, (2) a dual range unit, or (3) a single measurement range instrument capable of meeting both specifications with a single unit. Adjustments cannot be made to the analyzer between determinations of low- and high-level accuracy within the single measurement range. In the second case, when the concentration exceeds the span of the lower range, the data acquisition system recorder shall switch to the high range automatically.

2.1.4.1 CEMS Span Value. In order to measure high and low concentrations with the same or similar degree of accuracy, the maximum ranges (span values) are specified for low and high range analyzers. The span values are listed in Table 2.1-2. Tier I and Tier II format definitions are established in 40 CFR part 266, subpart H.

TABLE 2.1-1—Performance Specifications of CO and O₂ Monitors

Parameter	CO monitors		O ₂ monitors
	Low range	High range	
Calibration drift 24 hours.	≤ 6 ppm ¹ ...	≤ 90 ppm	≤ 0.5% O ₂
Calibration error.	≤ 10 ppm ¹ .	≤ 150 ppm	≤ 0.5% O ₂
Response time.	≤ 2 min.	≤ 2 min.	≤ 2 min
Relative accuracy ² .	(%)	(%)	(incorporated in CO RA calculation)

¹ For Tier II, CD and CE are ≤ 3% and ≤ 5% of twice the permit limit, respectively.

² Expressed as the sum of the mean absolute value plus the 95% confidence interval of a series of measurements.

³ The greater of 10% of PTM or 10 ppm.

TABLE 2.1-2—CEMS Span Values for CO and O₂ Monitors

	CO monitors		O ₂ monitors (percent)
	Low range (ppm)	High range (ppm)	
Tier I rolling average format.	200	3,000	25
Tier II rolling average format.	2 × permit limit.	3,000	25

2.1.4.2 Daily Calibration Gas Values. The owner or operator must choose calibration gas concentrations (or calibration filters for in-situ systems) that include zero and high-level calibration values for the daily calibration checks. For a single measurement range monitor, three CO calibration gas concentrations (or calibration filters for in-situ systems) shall be used, i.e., the zero and high-level concentrations of the low-range

CO analyzer and the high-level concentration of the high-range CO analyzer.

2.1.4.2.1 The zero level for the CO or O₂ analyzer may be between zero and 20 percent of the span value, e.g., 0-40 ppm for low-range CO analyzer, 0-600 ppm for the high-range CO analyzer, and 0-5 percent for the O₂ analyzer (for Tier I).

2.1.4.2.2 The high-level concentration for the CO or O₂ analyzer shall be between 50 and 90 percent of the span value, i.e., 100-180 ppm for the low-range CO analyzer, 1500-2700 ppm for the high-range CO analyzer, and 12.5-22.5 percent O₂ for the O₂ analyzer.

2.1.4.3 Data Recorder Scale. The strip chart recorder, computer, or digital recorder must be capable of recording all readings within the CEMS's measurement range and shall have a resolution of 0.5 percent of span value, i.e., 1 ppm CO for low-range CO analyzer, 15 ppm CO for high-range CO analyzer, and 0.1 percent O₂ for the O₂ analyzer.

2.1.4.4 Response Time. The response time for the CO or O₂ monitor shall not exceed 2 minutes to achieve 95 percent of the final stable value.

2.1.4.5 Calibration Drift. The CEMS must allow the determination of CD at the zero and high-level values. The CD must be determined separately for CO and O₂ monitors in terms of concentration. The CO CEMS calibration response must not drift or deviate from the reference value of the calibration gas (or calibration filters for in-situ systems) by more than 3 percent of the span value after each 24-hour period of the 7-day test, i.e., 6 ppm CO for the low-range analyzer (Tier I) and 90 ppm for the high-range analyzer, at both zero and high levels. The O₂ monitor calibration response must not drift or deviate from the reference value by more than 0.5 percent O₂ at both zero and high levels.

2.1.4.6 Relative Accuracy. The result of the PA test of the CO CEMS (which incorporates the O₂ monitor) must be no greater than 10 percent of the mean value of the PTM results or must be within 10 ppm CO of the PTM results, whichever is less restrictive. The ppm CO concentration shall be corrected to 7 percent O₂ before calculating the RA.

2.1.4.7 Calibration Error. The mean difference between the CEMS and reference values at all three test points (see Table 2.1-3) must be no greater than 5 percent of span value for CO monitors (i.e., 10 ppm CO for low range Tier I CO analyzers and 150 ppm CO for high range CO analyzers) and 0.5 percent for O₂ analyzers.

2.1.4.8 Measurement and Recording Frequency. The sample to be analyzed shall pass through the measurement section of the analyzer without interruption. The detector shall measure the sample concentration at least once every 15 seconds. An average

emission rate shall be computed and recorded at least once every 80 seconds.

2.1.4.9 Hourly Rolling Average Calculation. The CEMS shall calculate every minute an hourly rolling average, which is the arithmetic mean of the 60 most recent 1-minute average values.

2.1.4.10 Retest. If the CEMS produces results within the specified criteria, the test is successful. If the CEMS does not meet one or more of the criteria, the necessary corrections must be made and the performance tests repeated.

2.1.5 Test Periods

2.1.5.1 Pretest Preparation Period. Install the CEMS, prepare the PTM test site according to the specifications in section 2.1.3, and prepare the CEMS for operation and calibration according to the manufacturer's written instructions. A pretest conditioning period similar to that of the 7-day CD test is recommended to verify the operational status of the CEMS.

2.1.5.2 Calibration Drift Test Period. While the facility is operating under normal conditions, determine the CD at 24-hour intervals for seven consecutive days according to the procedure given in section 2.1.8.1. All CD determinations must be made following a 24-hour period during which no unscheduled maintenance, repair, or adjustment takes place. If the combustion unit is taken out of service during the test period, record the onset and duration of the downtime and continue the calibration drift test when the unit resumes operation.

2.1.5.3 Relative Accuracy Test Period. Conduct the RA test according to the procedure in section 2.1.6.4 while the facility is operating under normal conditions. RA testing for CO and O₂ shall be conducted simultaneously so that the results can be calculated for CO corrected to 7 percent O₂. The RA test shall be conducted during the CD test period. It is emphasized that during the CD test period, no adjustments or repairs may be made to the CEMS other than routine calibration adjustments performed immediately following the daily CD determination.

2.1.5.4 Calibration Error Test and Response Time Test Periods. Conduct the CE and response time tests during the CD test period.

2.1.6 Performance Specification Test Procedures

2.1.6.1 Calibration Drift Test.

2.1.6.1.1 Sampling Strategy. Conduct the CD test for all monitors at 24-hour intervals for seven consecutive days using calibration gases at the two (or three, if applicable) concentration levels specified in section 2.1.4.2. Introduce the calibration gases into the sampling system as close to the sampling probe outlet as practical. The gas shall pass

through all filters, scrubbers, conditioners, and other CEMS components used during normal sampling. If periodic automatic or manual adjustments are made to the CEMS zero and calibration settings, conduct the CD test immediately before these adjustments, or conduct it in such a way that the CD can be determined. Record the CEMS response and subtract this value from the reference (calibration gas) value. To meet the specification, none of the differences shall exceed the limits specified in Table 2.1-1.

2.1.6.1.2 Calculations. Summarize the results on a data sheet. An example is shown in Figure 2.1-1. Calculate the differences between the CEMS responses and the reference values.

2.1.6.2 Response Time. Check the entire CEMS including sample extraction and transport, sample conditioning, gas analyses, and the data recording.

2.1.6.2.1 Introduce zero gas into the system. For extractive systems, introduce the calibration gases at the probe as near to the sample location as possible. For in-situ system, introduce the zero gas at a point such that all components active in the analysis are tested. When the system output has stabilized (no change greater than 1 percent of full scale for 30 seconds), switch to monitor stack effluent and wait for a stable value. Record the time (upscale response time) required to reach 95 percent of the final stable value.

2.1.6.2.2 Next, introduce a high-level calibration gas and repeat the above procedure. Repeat the entire procedure three times and determine the mean upscale and downscale response times. The longer of the two means is the system response time.

2.1.6.3 Calibration Error Test Procedure.

2.1.6.3.1 Sampling Strategy. Challenge each monitor (both low- and high-range CO and O₂) with zero gas and EPA Protocol 1 cylinder gases at three measurement points within the ranges specified in Table 2.1-3.

TABLE 2.1-3—CALIBRATION ERROR CONCENTRATION RANGES FOR TIER I

Measurement point	GAS Concentration Ranges		
	CO, ppm		O ₂ , percent
	Low range ¹	High range	
1	0-40	0-600	0-2
2	60-80	900-1200	8-10
3	140-160	2100-2400	14-16

¹ For Tier II, the CE specifications for the low-range CO CEMS are 0-20%, 30-40%, and 70-80% of twice the permit limit.

SOURCE:	DATE:
MONITOR:	LOCATION:
SERIAL NUMBER:	SPAN:

LOW RANGE	
HIGH RANGE	

	DAY	DATE	TIME	CALIBRATION VALUE	MONITOR RESPONSE	DIFFERENCE	PERCENT OF SPAN*
ZERO/ LOW LEVEL	1						
	2						
	3						
	4						
	5						
	6						
	7						
HIGH LEVEL	1						
	2						
	3						
	4						
	5						
	6						
	7						

*Acceptance Criteria : $\leq 5\%$ of span each day for seven days.

Figure 2.1-1 Calibration Drift Determination

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2.1.6.3.1.1 If a single measurement range is used, the calibration gases used in the daily CD checks (if they are Protocol 1 cylinder gases and meet the criteria in section 2.1.6.3.1) may be used for determining CE.

2.1.6.3.1.2 Operate each monitor in its normal sampling mode as nearly as possible. The calibration gas shall be injected into the sample system as close to the sampling probe outlet as practical and should pass through all CEMS components used during normal sampling. Challenge the CEMS three non-consecutive times at each measurement point and record the responses. The duration of each gas injection should be sufficient to ensure that the CEMS surfaces are conditioned.

2.1.6.3.2 Calculations. Summarize the results on a data sheet. An example data sheet is shown in Figure 2.1-2. Average the differences between the instrument response and the certified cylinder gas value for each gas. Calculate three CE results (five CE results for a single-range CO CEMS) according to Equation 5 (section 2.1.7.5). No confidence coefficient is used in CE calculations.

2.1.6.4 Relative Accuracy Test Procedure.

2.1.6.4.1 Sampling Strategy for PTM tests. Conduct the PTM tests in such a way that they will yield measurements representative of the emissions from the source and can be correlated to the CEMS data. Although it is preferable to conduct the CO, diluent, and

moisture (if needed) simultaneously, moisture measurements that are taken within a 60-minute period which includes the simultaneous CO and O₂ measurements may be used to calculate the dry CO concentration.

Note: At times, CEMS RA tests may be conducted during incinerator performance tests. In these cases, PTM results obtained during CEMS RA tests may be used to determine compliance with incinerator emissions limits as long as the source and test conditions are consistent with the applicable regulations.

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SOURCE:	DATE:
MONITOR:	LOCATION:
SERIAL NUMBER:	SPAN:

LOW RANGE	
HIGH RANGE	

RUN NUMBER	CALIBRATION VALUE	MONITOR RESPONSE	DIFFERENCE		
			Zero/Low	Mid	High
1 - Zero					
2 - Mid					
3 - High					
4 - Mid					
5 - Zero					
6 - High					
7 - Zero					
8 - Mid					
9 - High					
MEAN DIFFERENCE =					
CALIBRATION ERROR =			%	%	%

Figure 2.1-2 Calibration Error Determination

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2.1.6.4.2 Performance Test Methods.

2.1.6.4.2.1 Unless otherwise specified in the regulations, method 3 or 3A and method 10, 10A, or 10B (40 CFR part 60, appendix A) are the test methods for O₂ and CO, respectively. Make a sample traverse of at least 21 minutes, sampling for 7 minutes at each of three traverse points (see section 3.2).

2.1.6.4.2.2 When the installed CEMS uses a nondispersive infrared (NDIR) analyzer, method 10 shall use the alternative interference trap specified in section 10.1 of the method. An option, which may be approved by the Administrator in certain cases, would allow the test to be conducted using method 10 without the interference trap. Under this option, a laboratory interference test is performed for the analyzer prior to the field test. The laboratory interference test includes the analysis of SO₂, NO, and CO₂ calibration gases over the range of expected effluent concentrations. Acceptable performance is indicated if the CO analyzer response to each of the gases is less than 1 percent of the applicable measurement range of the analyzer.

2.1.6.4.3 Number of PTM Tests. Conduct a minimum of nine sets of all necessary PTM tests. If more than nine sets are conducted, a maximum of three sets may be rejected at the tester's discretion. The total number of sets used to determine the RA must be greater than or equal to nine. All data, including the rejected data, must be reported.

2.1.6.4.4 Correlation of PTM and CEMS Data. The time and duration of each PTM test run and the CEMS response time should be considered in correlating the data. Use the CEMS final output (the one used for reporting) to determine an integrated average CO concentration for each PTM test run. Confirm that the pair of results are on a consistent moisture and O₂ concentration basis. Each integrated CEMS value should then be compared against the corresponding average PTM value. If the CO concentration measured by the CEMS is normalized to a specified diluent concentration, the PTM results shall be normalized to the same value.

2.1.6.4.5 Calculations. Summarize the results on a data sheet. Calculate the mean of the PTM values and calculate the arithmetic differences between the PTM and the CEMS data sets. The mean of the differences, standard deviation, confidence coefficient, and CEMS RA should be calculated using Equations 1 through 4.

2.1.7 Equations

2.1.7.1 Arithmetic Mean (\bar{d}). Calculate \bar{d} of the difference of a data set using Equation 1.

$$\bar{d} = \frac{1}{n} \sum_{i=1}^n d_i \quad (\text{Eq. 1})$$

where:

n = Number of data points.

n

Σ d_i = Algebraic sum of the individual difference d_i .

i=1

When the mean of the differences of pairs of data is calculated, correct the data for moisture, if applicable.

2.1.7.2 Standard Deviation (S_d). Calculate S_d using Equation 2.

$$S_d = \sqrt{\frac{\sum_{i=1}^n d_i^2 - \frac{n-1}{n}}{n-1}} \quad (\text{Eq. 2})$$

2.1.7.3 Confidence Coefficient (CC). Calculate the 2.5 percent error CC (one-tailed) using Equation 3.

$$CC = t_{0.975} \frac{S_d}{\sqrt{n}} \quad (\text{Eq. 3})$$

where:

$t_{0.975}$ = t-value (see Table 2.1-4).

TABLE 2.1-4—t-Values

n*	t _{0.975}	n*	t _{0.975}	n*	t _{0.975}
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.662	15	2.145
6	2.571	11	2.228	16	2.131

* The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

2.1.7.4 Relative Accuracy. Calculate the RA of a set of data using Equation 4.

$$RA = \frac{|\bar{d}| + |CC|}{PTM} \times 100 \quad (\text{Eq. 4})$$

where:

$|\bar{d}|$ = Absolute value of the mean of the differences (Equation 1).

$|CC|$ = Absolute value of the confidence coefficient (Equation 3).

PTM = Average reference value.

2.1.7.5 Calibration Error. Calculate CE using Equation 5.

$$CE = \left| \frac{\bar{d}}{FS} \right| \times 100 \quad (\text{Eq. 5})$$

where:

\bar{d} = Mean difference between CEMS response and the known reference concentration.

2.1.8 Reporting

At a minimum, summarize in tabular form the results of the CD, RA, response time, and CE test, as appropriate. Include all data sheets, calculations, CEMS data records, and cylinder gas or reference material certifications.

2.1.9 Alternative Procedure**2.1.9.1 Alternative RA Procedure**

Rationale. Under some operating conditions, it may not be possible to obtain meaningful results using the RA test procedure. This includes conditions where consistent, very low CO emissions or low CO emissions interrupted periodically by short duration, high level spikes are observed. It may be appropriate in these circumstances to waive the PTM RA test and substitute the following procedure.

2.1.9.2 Alternative RA Procedure. Conduct a complete CEMS status check following the manufacturer's written instructions. The check should include operation of the light source, signal receiver, timing mechanism functions, data acquisition and data reduction functions, data recorders, mechanically operated functions (mirror movements, calibration gas valve operations, etc.), sample filters, sample line heaters, moisture traps, and other related functions of the CEMS, as applicable. All parts of the CEMS must be functioning properly before the RA requirement can be waived. The instruments must also have successfully passed the CE and CD requirements of the performance specifications. Substitution of the alternative procedure requires approval of the Regional Administrator.

2.1.10 Quality Assurance (QA)

Proper calibration, maintenance, and operation of the CEMS is the responsibility of the owner or operator. The owner or operator must establish a QA program to evaluate and monitor CEMS performance. As a minimum, the QA program must include:

2.1.10.1 A daily calibration check for each monitor. The calibration must be adjusted if the check indicates the instrument's CD exceeds the specification established in section 2.1.4.5. The gases shall be injected as close to the probe as possible to provide a check of the entire sampling system. If an alternative calibration procedure is desired (e.g., direct injections or gas cells), subject to Administrator approval, the adequacy of this alternative procedure may be demonstrated during the initial 7-day CD test. Periodic comparisons of the two procedures are suggested.

2.1.10.2 A daily system audit. The audit must include a review of the calibration check data, an inspection of the recording system, an inspection of the control panel warning lights, and an inspection of the sample transport and interface system (e.g., flowmeters, filters), as appropriate.

2.1.10.3 A quarterly calibration error (CE) test. Quarterly RA tests may be substituted for the CE test when approved by the Director on a case-by-case basis.

2.1.10.4 An annual performance specification test.

2.1.11 References

1. Jahnke, James A. and G.J. Aldina, "Handbook: Continuous Air Pollution Source Monitoring Systems," U.S. Environmental Protection Agency Technology Transfer, Cincinnati, Ohio 45268, EPA-625/6-79-005, June 1979.

2. "Gaseous Continuous Emissions Monitoring Systems-Performance Specification Guidelines for SO₂, NO_x, CO₂, O₂, and TRS." U.S. Environmental Protection Agency OAQPS, ESED, Research Triangle Park, North Carolina 27711, EPA-450/3-82-026, October 1982.

3. "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume I. Principles." U.S. Environmental Protection Agency ORD/EMSL, Research Triangle Park, North Carolina, 27711, EPA-600/9-78-006, December 1984.

4. Michie, Raymond, M. Jr., et al., "Performance Test Results and Comparative Data for Designated Reference Methods for Carbon Monoxide," U.S. Environmental Protection Agency ORD/EMSL, Research Triangle Park, North Carolina, 27711, EPA-600/S4-83-013, September 1982.

5. Ferguson, B.B., R.E. Lester, and W.J. Mitchell, "Field Evaluation of Carbon Monoxide and Hydrogen Sulfide Continuous Emission Monitors at an Oil Refinery," U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711, EPA-600/4-82-054, August 1982.

2.2 Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste

2.2.1 Applicability and Principle

2.2.1.1 Applicability. These performance specifications apply to hydrocarbon (HC) continuous emission monitoring systems (CEMSs) installed on incinerators, boilers, and industrial furnaces burning hazardous waste. The specifications include procedures which are intended to be used to evaluate the acceptability of the CEMS at the time of its installation or whenever specified in regulations or permits. The procedures are not designed to evaluate CEMS performance over an extended period of time. The source owner or operator is responsible for the proper calibration, maintenance, and operation of the CEMS at all times.

2.2.1.2 Principle. A gas sample is extracted from the source through a heated sample line and heated filter (except as provided by section 2.2.10) to a flame ionization detector (FID). Results are reported as volume concentration equivalents of propane. Installation and measurement location specifications, performance and equipment specifications, test and data reduction procedures, and brief quality assurance guidelines are included in the specifications. Calibration drift, calibration error, and response time tests are conducted to determine conformance of the CEMS with the specifications.

2.2.2 Definitions

2.2.2.1 Continuous Emission Monitoring System (CEMS). The total equipment used to acquire data, which includes sample extraction and transport hardware, analyzer, data recording and processing hardware, and software. The system consists of the following major subsystems:

2.2.2.1.1 Sample Interface. That portion of the system that is used for one or more of the following: Sample acquisition, sample transportation, sample conditioning, or protection of the analyzer from the effects of the stack effluent.

2.2.2.1.2 Organic Analyzer. That portion of the system that senses organic concentration and generates an output proportional to the gas concentration.

2.2.2.1.3 Data Recorder. That portion of the system that records a permanent record of the measurement values. The data recorder may include automatic data reduction capabilities.

2.2.2.2 Instrument Measurement Range. The difference between the minimum and maximum concentration that can be measured by a specific instrument. The minimum is often stated or assumed to be zero and the range expressed only as the maximum.

2.2.2.3 Span or Span Value. Full scale instrument measurement range.

2.2.2.4 Calibration Gas. A known concentration of a gas in an appropriate diluent gas.

2.2.2.5 Calibration Drift (CD). The difference in the CEMS output readings from the established reference value after a stated period of operation during which no unscheduled maintenance, repair, or adjustment takes place. A CD test is performed to demonstrate the stability of the CEMS calibration over time.

2.2.2.6 Response Time. The time interval between the start of a step change in the system input (e.g., change of calibration gas) and the time when the data recorder displays 95 percent of the final value.

2.2.2.7 Accuracy. A measurement of agreement between a measured value and an accepted or true value, expressed as the percentage difference between the true and measured values relative to the true value. For these performance specifications, accuracy is checked by conducting a calibration error (CE) test.

2.2.2.8 Calibration Error (CE). The difference between the concentration indicated by the CEMS and the known concentration of the cylinder gas. A CE test procedure is performed to document the accuracy and linearity of the monitoring equipment over the entire measurement range.

2.2.2.9 Performance Specification Test (PST) Period. The period during which CD, CE, and response time tests are conducted.

2.2.2.10 Centroidal Area. A concentric area that is geometrically similar to the stack or duct cross section and is no greater than 1 percent of the stack or duct cross-sectional area.

2.2.3 Installation and Measurement Location Specifications

2.2.3.1 CEMS Installation and Measurement Locations. The CEMS shall be

installed in a location in which measurements representative of the source's emissions can be obtained. The optimum location of the sample interface for the CEMS is determined by a number of factors, including ease of access for calibration and maintenance, the degree to which sample conditioning will be required, the degree to which it represents total emissions, and the degree to which it represents the combustion situation in the firebox. The location should be as free from in-leakage influences as possible and reasonably free from severe flow disturbances. The sample location should be at least two equivalent duct diameters downstream from the nearest control device, point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate occurs and at least 0.5 diameter upstream from the exhaust or control device. The equivalent duct diameter is calculated as per 40 CFR part 60, appendix A, method 1, section 2.1. If these criteria are not achievable or if the location is otherwise less than optimum, the possibility of stratification should be investigated as described in section 2.2.3.2. The measurement point shall be within the centroidal area of the stack or duct cross section.

2.2.3.2 Stratification Test Procedure. Stratification is defined as a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall. To determine whether effluent stratification exists, a dual probe system should be used to determine the average effluent concentration while measurements at each traverse point are being made. One probe, located at the stack or duct centroid, is used as a stationary reference point to indicate the change in effluent concentration over time. The second probe is used for sampling at the traverse points specified in 40 CFR Part 60 appendix A, method 1. The monitoring system samples sequentially at the reference and traverse points throughout the testing period for five minutes at each point.

2.2.4 CEMS Performance and Equipment Specifications

If this method is applied in highly explosive areas, caution and care shall be exercised in choice of equipment and installation.

2.2.4.1 Flame Ionization Detector (FID) Analyzer. A heated FID analyzer capable of meeting or exceeding the requirements of these specifications. Heated systems shall maintain the temperature of the sample gas between 150 °C (300 °F) and 175 °C (350 °F) throughout the system. This requires all system components such as the probe, calibration valve, filter, sample lines, pump, and the FID to be kept heated at all times such that no moisture is condensed out of the system.

Note: As specified in the regulations, unheated HC CEMs may be considered an acceptable interim alternative monitoring technique. For additional notes, see section 2.2.10. The essential components of the measurement system are described below:

2.2.4.1.1 Sample Probe. Stainless steel, or equivalent, to collect a gas sample from the centroidal area of the stack cross-section.

2.2.4.1.2 Sample Line. Stainless steel or Teflon tubing to transport the sample to the analyzer.

Note: Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

2.2.4.1.3 Calibration Valve Assembly. A heated three-way valve assembly to direct the zero and calibration gases to the analyzer is recommended. Other methods, such as quick-connect lines, to route calibration gas to the analyzers are applicable.

2.2.4.1.4 Particulate Filter. An in-stack or out-of-stack sintered stainless steel filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated.

2.2.4.1.5 Fuel. The fuel specified by the manufacturer (e.g., 40 percent hydrogen/60 percent helium, 40 percent hydrogen/60 percent nitrogen gas mixtures, or pure hydrogen) should be used.

2.2.4.1.6 Zero Gas. High purity air with less than 0.1 parts per million by volume (ppm) HC as methane or carbon equivalent or less than 0.1 percent of the span value, whichever is greater.

2.2.4.1.7 Calibration Gases. Appropriate concentrations of propane gas (in air or nitrogen). Preparation of the calibration gases should be done according to the procedures in EPA Protocol 1. In addition, the manufacturer of the cylinder gas should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change by more than ± 2 percent from the certified value.

2.2.4.2 CEMS Span Value. 100 ppm propane.

2.2.4.3 Daily Calibration Gas Values. The owner or operator must choose calibration gas concentrations that include zero and high-level calibration values.

2.2.4.3.1 The zero level may be between 0 and 20 ppm (zero and 20 percent of the span value).

2.2.4.3.2 The high-level concentration shall be between 50 and 90 ppm (50 and 90 percent of the span value).

2.2.4.4 Data Recorder Scale. The strip chart recorder, computer, or digital recorder must be capable of recording all readings within the CEMS's measurement range and shall have a resolution of 0.5 ppm (0.5 percent of span value).

2.2.4.5 Response Time. The response time for the CEMS must not exceed 2 minutes to achieve 95 percent of the final stable value.

2.2.4.6 Calibration Drift. The CEMS must allow the determination of CD at the zero and high-level values. The CEMS calibration response must not differ by more than ± 3 ppm (± 3 percent of the span value) after each 24-hour period of the 7-day test at both zero and high levels.

2.2.4.7 Calibration Error. The mean difference between the CEMS and reference values at all three test points listed below shall be no greater than 5 ppm (± 5 percent of the span value).

2.2.4.7.1 Zero Level. Zero to 20 ppm (0 to 20 percent of span value).

2.2.4.7.2 Mid-Level. 30 to 40 ppm (30 to 40 percent of span value).

2.2.4.7.3 High-Level. 70 to 80 ppm (70 to 80 percent of span value).

2.2.4.8 Measurement and Recording Frequency. The sample to be analyzed shall pass through the measurement section of the analyzer without interruption. The detector shall measure the sample concentration at least once every 15 seconds. An average emission rate shall be computed and recorded at least once every 60 seconds.

2.2.4.9 Hourly Rolling Average Calculation. The CEMS shall calculate every minute an hourly rolling average, which is the arithmetic mean of the 60 most recent 1-minute average values.

2.2.4.10 Refest. If the CEMS produces results within the specified criteria, the test is successful. If the CEMS does not meet one or more of the criteria, necessary corrections must be made and the performance tests repeated.

2.2.5 Performance Specification Test (PST) Periods

2.2.5.1 Pretest Preparation Period. Install the CEMS, prepare the PTM test site according to the specifications in section 2.2.3, and prepare the CEMS for operation and calibration according to the manufacturer's written instructions. A pretest conditioning period similar to that of the 7-day CD test is recommended to verify the operational status of the CEMS.

2.2.5.2 Calibration Drift Test Period. While the facility is operating under normal conditions, determine the magnitude of the CD at 24-hour intervals for seven consecutive days according to the procedure given in section 2.2.6.1. All CD determinations must be made following a 24-hour period during which no unscheduled maintenance, repair, or adjustment takes place. If the combustion unit is taken out of service during the test period, record the onset and duration of the downtime and continue the CD test when the unit resumes operation.

2.2.5.3 Calibration Error Test and Response Time Test Periods. Conduct the CE and response time tests during the CD test period.

2.2.6 Performance Specification Test Procedures

2.2.6.1 Calibration Drift Test.

2.2.6.1.1 Sampling Strategy. Conduct the CD test at 24-hour intervals for seven consecutive days using calibration gases at the two daily concentration levels specified in section 2.2.4.3. Introduce the two calibration gases into the sampling system as close to the sampling probe outlet as practical. The gas shall pass through all CEM components used during normal sampling. If periodic automatic or manual adjustments are made to the CEMS zero and calibration settings, conduct the CD test immediately before these adjustments, or conduct it in such a way that the CD can be determined. Record the CEMS response and subtract this value from the reference (calibration gas) value. To meet the specification, none of the differences shall exceed 3 ppm.

2.2.6.1.2 Calculations. Summarize the results on a data sheet. An example is shown in Figure 2.2-1. Calculate the differences between the CEMS responses and the reference values.

2.2.6.2 Response Time. The entire system including sample extraction and transport, sample conditioning, gas analyses, and the data recording is checked with this procedure.

2.2.6.2.1 Introduce the calibration gases at the probe as near to the sample location as possible. Introduce the zero gas into the system. When the system output has stabilized (no change greater than 1 percent of full scale for 30 sec), switch to monitor stack effluent and wait for a stable value. Record the time (upscale response time) required to reach 95 percent of the final stable value.

2.2.6.2.2 Next, introduce a high-level calibration gas and repeat the above procedure. Repeat the entire procedure three times and determine the mean upscale and downscale response times. The longer of the two means is the system response time.

2.2.6.3 Calibration Error Test Procedure.

2.2.6.3.1 Sampling Strategy. Challenge the CEMS with zero gas and EPA Protocol 1 cylinder gases at measurement points within the ranges specified in section 2.2.4.7.

2.2.6.3.1.1 The daily calibration gases, if Protocol 1, may be used for this test.

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SOURCE:	DATE:
MONITOR:	LOCATION:
SERIAL NUMBER:	SPAN:

	DAY	DATE	TIME	CALIBRATION VALUE	MONITOR RESPONSE	DIFFERENCE	PERCENT OF SPAN*
ZERO/ LOW LEVEL	1						
	2						
	3						
	4						
	5						
	6						
	7						
HIGH LEVEL	1						
	2						
	3						
	4						
	5						
	6						
	7						

*Acceptance Criteria : $\leq 3\%$ of span each day for seven days.

Figure 2.2-1 Calibration Drift Determination

2.2.6.3.1.2 Operate the CEMS as nearly as possible in its normal sampling mode. The calibration gas should be injected into the sampling system as close to the sampling probe outlet as practical and shall pass through all filters, scrubbers, conditioners, and other monitor components used during normal sampling. Challenge the CEMS three non-consecutive times at each measurement point and record the responses. The duration of each gas injection should be for a sufficient period of time to ensure that the CEMS surfaces are conditioned.

2.2.6.3.2 Calculations. Summarize the results on a data sheet. An example data sheet is shown in Figure 2.2-2. Average the differences between the instrument response and the certified cylinder gas value for each gas. Calculate three CE results according to Equation 1. No confidence coefficient is used in CE calculations.

2.2.7 Equations

2.2.7.1 Calibration Error. Calculate CE using Equation 1.

$$\text{CE} = \left| \frac{\bar{d}}{\text{FS}} \right| \times 100 \quad (\text{Eq. 1})$$

where.

\bar{d} - Mean difference between CEMS response and the known reference concentration.

2.2.8 Reporting

At a minimum, summarize in tabular form the results of the CD, response time, and CE test, as appropriate. Include all data sheets, calculations, CEMS data records, and cylinder gas or reference material certifications.

SOURCE:	DATE:
MONITOR:	LOCATION:
SERIAL NUMBER:	SPAN:

RUN NUMBER	CALIBRATION VALUE	MONITOR RESPONSE	DIFFERENCE		
			Zero/Low	Mid	High
1 - Zero					
2 - Mid					
3 - High					
4 - Mid					
5 - Zero					
6 - High					
7 - Zero					
8 - Mid					
9 - High					
MEAN DIFFERENCE =					
CALIBRATION ERROR =			%	%	%

Figure 2.2-2 Calibration Error Determination

2.2.9 Quality Assurance (QA)

Proper calibration, maintenance, and operation of the CEMS is the responsibility of the owner or operator. The owner or operator must establish a QA program to evaluate and monitor CEMS performance. As a minimum, the QA program must include:

2.2.9.1 A daily calibration check for each monitor. The calibration must be adjusted if the check indicates the instrument's CD exceeds 3 ppm. The gases shall be injected as close to the probe as possible to provide a check of the entire sampling system. If an alternative calibration procedure is desired (e.g., direct injections or gas cells), subject to Administrator approval, the adequacy of this alternative procedure may be demonstrated during the initial 7-day CD test. Periodic comparisons of the two procedures are suggested.

2.2.9.2 A daily system audit. The audit must include a review of the calibration check data, an inspection of the recording system, an inspection of the control panel warning lights, and an inspection of the sample transport and interface system (e.g., flowmeters, filters), as appropriate.

2.2.9.3 A quarterly CE test. Quarterly RA tests may be substituted for the CE test when approved by the Director on a case-by-case basis.

2.2.9.4 An annual performance specification test.

2.2.10 Alternative Measurement Technique

The regulations allow gas conditioning systems to be used in conjunction with unheated HC CEMs during an interim period. This gas conditioning may include cooling to not less than 40 °F and the use of condensate traps to reduce the moisture content of sample gas entering the FID to less than 2 percent. The gas conditioning system, however, must not allow the sample gas to bubble through the condensate as this would remove water soluble organic compounds. All components upstream of the conditioning system should be heated as described in section 2.2.4 to minimize operating and maintenance problems.

2.2.11 References

1. Measurement of Volatile Organic Compounds-Guideline Series. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711, EPA-450/2-78-041, June 1978.
2. Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U.S. Environmental Protection Agency ORD/EMSL, Research Triangle Park, North Carolina, 27711, June 1978.
3. Gasoline Vapor Emission Laboratory Evaluation-Part 2. U.S. Environmental Protection Agency, OAQPS, Research Triangle Park, North Carolina, 27711, EMB Report No. 76-GAS-6, August 1975.

Section 3.0 SAMPLING AND ANALYTICAL METHODS

3.1 Methodology for the Determination of Metals Emissions in Exhaust Gases from Hazardous Waste Incineration and Similar Combustion Processes

3.1.1 Applicability and Principle

3.1.1.1 Applicability. This method is being developed for the determination of total chromium (Cr), cadmium (Cd), arsenic (As), nickel (Ni), manganese (Mn), beryllium (Be), copper (Cu), zinc (Zn), lead (Pb), selenium (Se), phosphorus (P), thallium (Tl), silver (Ag), antimony (Sb), barium (Ba), and mercury (Hg) stack emissions from hazardous waste incinerators and similar combustion processes. This method may also be used for the determination of particulate emissions following the procedures and precautions described. Modifications to the sample recovery and analysis procedures described in this protocol for the purpose of determining particulate emissions may potentially impact the front-half mercury determination. Mercury emissions should be determined using EPA method 101A given in 40 CFR part 61.

3.1.1.2 Principle. The stack sample is withdrawn isokinetically from the source, with particulate emissions collected in the probe and on a heated filter and gaseous emissions collected in a series of chilled impingers containing an aqueous solution of dilute nitric acid combined with dilute hydrogen peroxide in each of two impingers, and acidic potassium permanganate solution in each of two impingers. Sampling train components are recovered and digested in separate front- and back-half fractions. Materials collected in the sampling train are digested with acid solutions to dissolve organics and to remove organic constituents that may create analytical interferences. Acid digestion is performed using conventional Parr® Bomb or microwave digestion techniques. The nitric acid and hydrogen peroxide impinger solution, the acidic potassium permanganate impinger solution, the HCl rinse solution, and the probe rinse and digested filter solutions are analyzed for mercury by cold vapor atomic absorption spectroscopy (CVAAS). The nitric acid and hydrogen peroxide solution and the probe rinse and digested filter solutions of the train catches are analyzed for Cr, Cd, Ni, Mn, Be, Cu, Zn, Pb, Se, P, Tl, Ag, Sb, Ba, and As by inductively coupled argon plasma emission spectroscopy (ICAP) or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of antimony, arsenic, cadmium, lead, selenium, and thallium, if these elements require greater analytical sensitivity than can be obtained by ICAP. Additionally, if desired, the tester may use AAS for analyses of all metals if the resulting in-stack method detection limits meet the goal of the testing program. For convenience, aliquots of each digested sample Fraction 1A plus Fraction 2A can be combined proportionally with respect to the original Fraction 1 (normally diluted to 300 ml following digestion and prior to analysis) section 3.1.5.3.3; and concentrated Fraction 2A (normally diluted to 150 ml following digestion and prior to analysis)

section 3.1.5.3.4.1 or 3.1.5.3.4.2 for a single analytical determination. The efficiency of the analytical procedure is quantified by the analysis of spiked quality control samples containing each of the target metals and/or other quality assurance measures, as necessary, including actual sample matrix effects checks.

3.1.2 Range, Sensitivity, Precision, and Interferences

3.1.2.1 Range. For the analyses described in this methodology and for similar analyses, the ICAP response is linear over several orders of magnitude. Samples containing metal concentrations in the nanograms per milliliter (ng/ml) to micrograms per milliliter ($\mu\text{g}/\text{ml}$) range in the analytical finish solution can be analyzed using this technique. Samples containing greater than approximately 50 $\mu\text{g}/\text{ml}$ of chromium, lead, or arsenic should be diluted to that level or lower for final analysis. Samples containing greater than approximately 20 $\mu\text{g}/\text{ml}$ of cadmium should be diluted to that level before analysis.

3.1.2.2 Analytical Sensitivity. ICAP analytical detection limits for the sample solutions (based on SW-846, method 6010) are approximately as follows: Sb (32 ng/ml), As (53 ng/ml), Ba (2 ng/ml), Be (0.3 ng/ml), Cd (4 ng/ml), Cr (7 ng/ml), Cu (6 ng/ml), Pb (42 ng/ml), Mn (2 ng/ml), Ni (15 ng/ml), P (75 ng/ml), Se (75 ng/ml), Ag (7 ng/ml), Tl (40 ng/ml), and Zn (2 ng/ml). The actual method detection limits are sample dependent and may vary as the sample matrix may affect the limits. The analytical detection limits for analysis by direct aspiration AAS (based on SW-846, Method 7000 series) are approximately as follows: Sb (200 ng/ml), As (2 ng/ml), Ba (100 ng/ml), Be (5 ng/ml), Cd (5 ng/ml), Cr (50 ng/ml), Cu (20 ng/ml), Pb (100 ng/ml), Mn (10 ng/ml), Ni (40 ng/ml), Se (2 ng/ml), Ag (10 ng/ml), Tl (100 ng/ml), and Zn (5 ng/ml). The detection limit for mercury by CVAAS is approximately 0.2 ng/ml. The use of GFAAS can give added sensitivity compared to the use of direct aspiration AAS for the following metals: Sb (3 ng/ml), As (1 ng/ml), Be (0.2 ng/ml), Cd (0.1 ng/ml), Cr (1 ng/ml), Pb (1 ng/ml), Se (2 ng/ml), and Tl (1 ng/ml).

Using (1) the procedures described in this method, (2) the analytical detection limits described in the previous paragraph, (3) a volume of 300 ml, Fraction 1, for the front half and 150 ml, Fraction 2A, for the back-half samples, and (4) a stack gas sample volume of 1.25 m^3 , the corresponding instack method detection limits are presented in Table A-1 and calculated as shown:

$$\frac{A \times B}{C} = D$$

where:

A=analytical detection limit, $\mu\text{g}/\text{ml}$.

B=volume of sample prior to aliquot for analysis, ml.

C=stack sample volume, dscm (dsm³).

D=in-stack detection limit, $\mu\text{g}/\text{m}^3$.

Values in Table 3.1-1 are calculated for the front and back half and/or the total train.

To ensure optimum sensitivity in obtaining the measurements, the concentrations of target metals in the solutions are suggested to be at least ten times the analytical detection limits. Under certain conditions, and with greater care in the analytical procedure, this concentration can be as low as approximately three times the analytical detection limit. In all cases, on at least one sample (run) in the source test and for each metal analyzed, repetitive analyses, method of standard additions [MSA], serial dilution, or matrix spike addition, etc., shall be used to establish the quality of the data.

Actual in-stack method detection limits will be determined based on actual source sampling parameters and analytical results as described above. If required, the method in-stack detection limits can be made more sensitive than those shown in Table A-1 for a

specific test by using one or more of the following options:

- A 1-hour sampling run may collect a stack gas sampling volume of about 1.25 m³. If the sampling time is increased and 5 m³ are collected, the in-stack method detection limits would be one fourth of the values shown in Table A-1 (this means that with this change, the method is four times more sensitive than a 1-hour run. Larger sample volumes (longer runs) would make it even more sensitive).

- The in-stack detection limits assume that all of the sample is digested (with exception of the aliquot for mercury) and the final liquid volumes for analysis are 300 ml, Fraction 1 for the front half and 150 ml, Fraction 2A, for the back-half sample. If the front-half volume is reduced from 300 ml to 30 ml, the front-half in-stack detection limits would be one tenth of the values shown above (ten times more

sensitive). If the back-half volume is reduced from 150 ml to 25 ml, the in-stack detection limits would be one sixth of the above values. Matrix effects checks are necessary on analyses of samples and typically are of greater significance for samples that have been concentrated to less than the normal original sample volume. Reduction to a volume of less than 25 ml may not allow redissolving of the residue and may increase interference by other compounds.

- When both of the above two improvements are used on one sample at the same time, the resultant improvements are multiplicative. For example, where stack gas volume is increased by a factor of five and the total liquid sample digested volume of both the front and back halves is reduced by a factor of six, the in-stack method detection limit is reduced by a factor of thirty (the method is thirty times more sensitive).

TABLE 3.1-1—IN-STACK METHOD DETECTION LIMITS (ug/m³) FOR TRAIN FRACTIONS USING ICAP AND AAS

Metal	Front-half fraction 1 probe and filter	Back-half fraction 2 impingers 1-3	Back-half fractions "Hg, only" impingers 4-6	Total train
Antimony.....	7.7 (0.7)*	3.8 (0.4)*		11.5 (1.1)*
Arsenic.....	12.7 (0.3)*	6.4 (0.1)*		19.1 (0.4)*
Barium.....	0.5	0.3		0.8
Beryllium.....	0.07 (0.05)*	0.04 (0.03)*		0.11 (0.08)*
Cadmium.....	1.0 (0.02)*	0.5 (0.01)*		1.5 (0.03)*
Chromium.....	1.7 (0.2)*	0.8 (0.1)*		2.5 (0.3)*
Copper.....	1.4	0.7		2.1
Lead.....	10.1 (0.2)*	5.0 (0.1)*		15.1 (0.3)*
Manganese.....	0.5 (0.2)*	0.2 (0.1)*		0.7 (0.3)*
Mercury.....	0.6**	3.0**	2.0**	5.6**
Nickel.....	3.8	1.8		5.4
Phosphorus.....	18	9		27
Selenium.....	18 (0.5)*	9 (0.3)*		27 (0.8)*
Silver.....	1.7	0.9		2.6
Thallium.....	9.8 (0.2)*	4.8 (0.1)*		14.4 (0.3)*
Zinc.....	0.5	0.3		0.8

(*)* Detection limit when analyzed by GFAAS.

** Detection limit when analyzed by CVAAS, estimated for Back Half and Total Train.

NOTE: Actual method in-stack detection limits will be determined based on actual source sampling parameters and analytical results as described earlier in this section.

- Conversely, reducing stack gas sample volume and increasing sample liquid volume will increase in-stack detection limits (the method would then be less sensitive). The front-half and back-half samples (Fractions 1A plus 2A) can be combined proportionally (see section 3.1.1.2 of this methodology) prior to analysis. The resultant liquid volume (excluding the mercury fractions, which must be analyzed separately) is recorded. Combining the sample as described does not allow determination (whether front or back half) of where in the train the sample was captured. The in-stack method detection limit then becomes a single value for all metals except mercury, for which the contribution of the mercury fractions must be considered.

- The above discussion assumes no blank correction. Blank corrections are discussed later in this method.

3.1.2.3 Precision. The precisions (relative standard deviation) for each metal detected

in a method development test at a sewage sludge incinerator, are as follows: Sb (12.7%), As (13.5%), Ba (20.6%), Cd (11.5%), Cr (11.2%), Cu (11.5%), Pb (11.6%), P (14.6%), Se (15.3%), Tl (12.3%), and Zn (11.8%). The precision for nickel was 7.7% for another test conducted at a source simulator. Beryllium, manganese, and silver were not detected in the tests; however, based on the analytical sensitivity of the ICAP for these metals, it is assumed that their precisions should be similar to those for the other metals, when detected at similar levels.

3.1.2.4 Interferences. Iron can be a spectral interference during the analysis of arsenic, chromium, and cadmium by ICAP. Aluminum can be a spectral interference during the analysis of arsenic and lead by ICAP. Generally, these interferences can be reduced by diluting the sample, but this increases the method detection limit (in-stack detection limit). Refer to EPA method 8010 (SW-846) or the other analytical methods

used for details on potential interferences for this method. The analyst must eliminate or reduce interferences to acceptable levels. For all GFAAS analyses, matrix modifiers should be used to limit interferences, and standards should be matrix matched.

3.1.3 Apparatus

3.1.3.1 Sampling Train. A schematic of the sampling train is shown in Figure 3.1-1. It is similar to the 40 CFR part 60, appendix A method 5 train. The sampling train consists of the following components:

3.1.3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as method 5, sections 2.1.1 and 2.1.2, except that glass nozzles are required unless an alternate probe tip prevents the possibility of contamination or interference of the sample with its materials of construction. If a probe tip other than glass is used, no correction (because of any effect on the

sample by the probe tip) of the stack sample test results can be made.

3.1.3.1.2 Pitot Tube and Differential Pressure Gauge. Same as method 2, sections 2.1 and 2.2, respectively.

3.1.3.1.3 Filter Holder. Glass, same as method 5, section 2.1.5, except that a Teflon filter support or other non-metallic, non-contaminating support must be used to replace the glass frit.

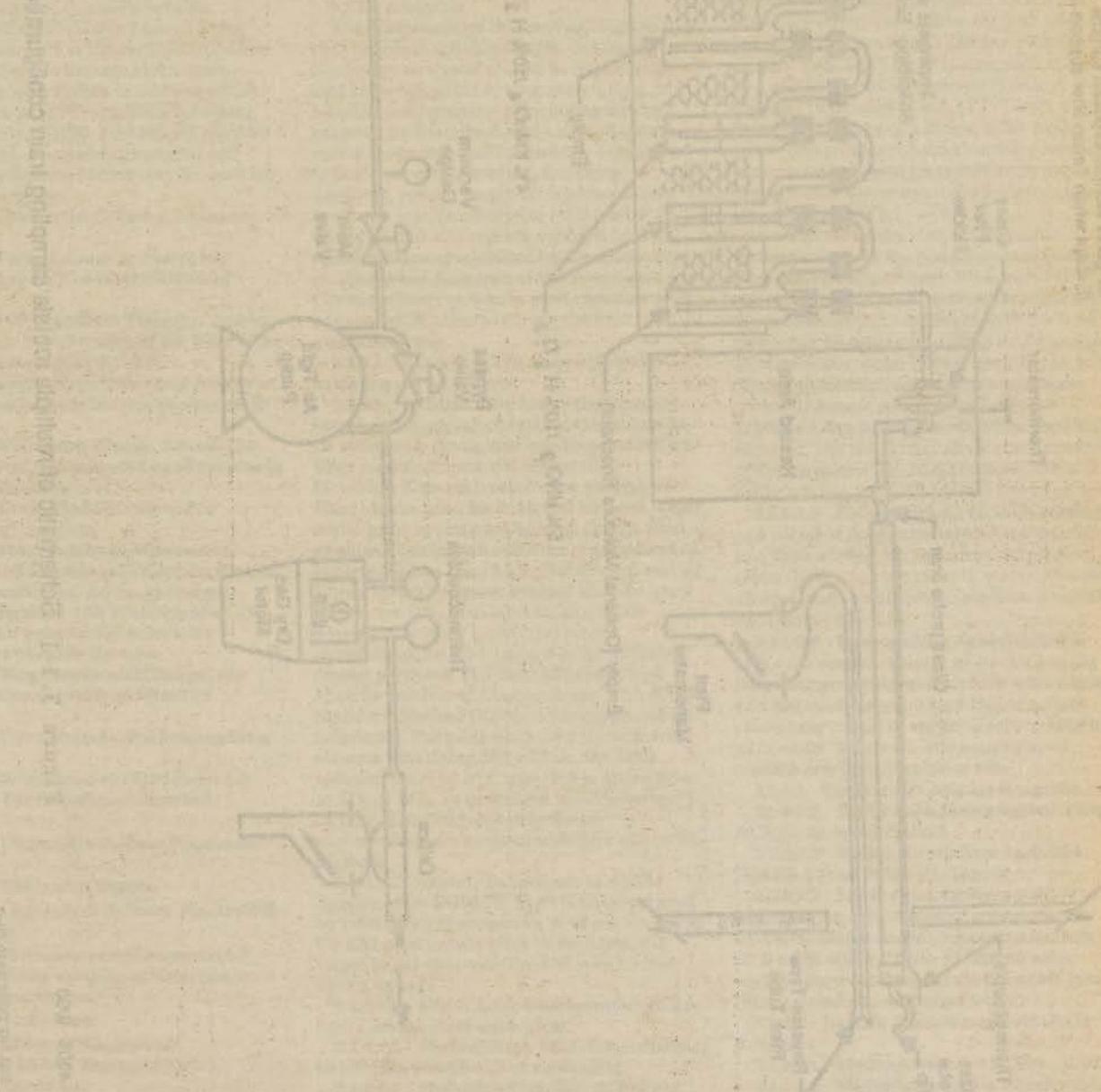
3.1.3.1.4 Filter Heating System. Same as method 5, section 2.1.6.

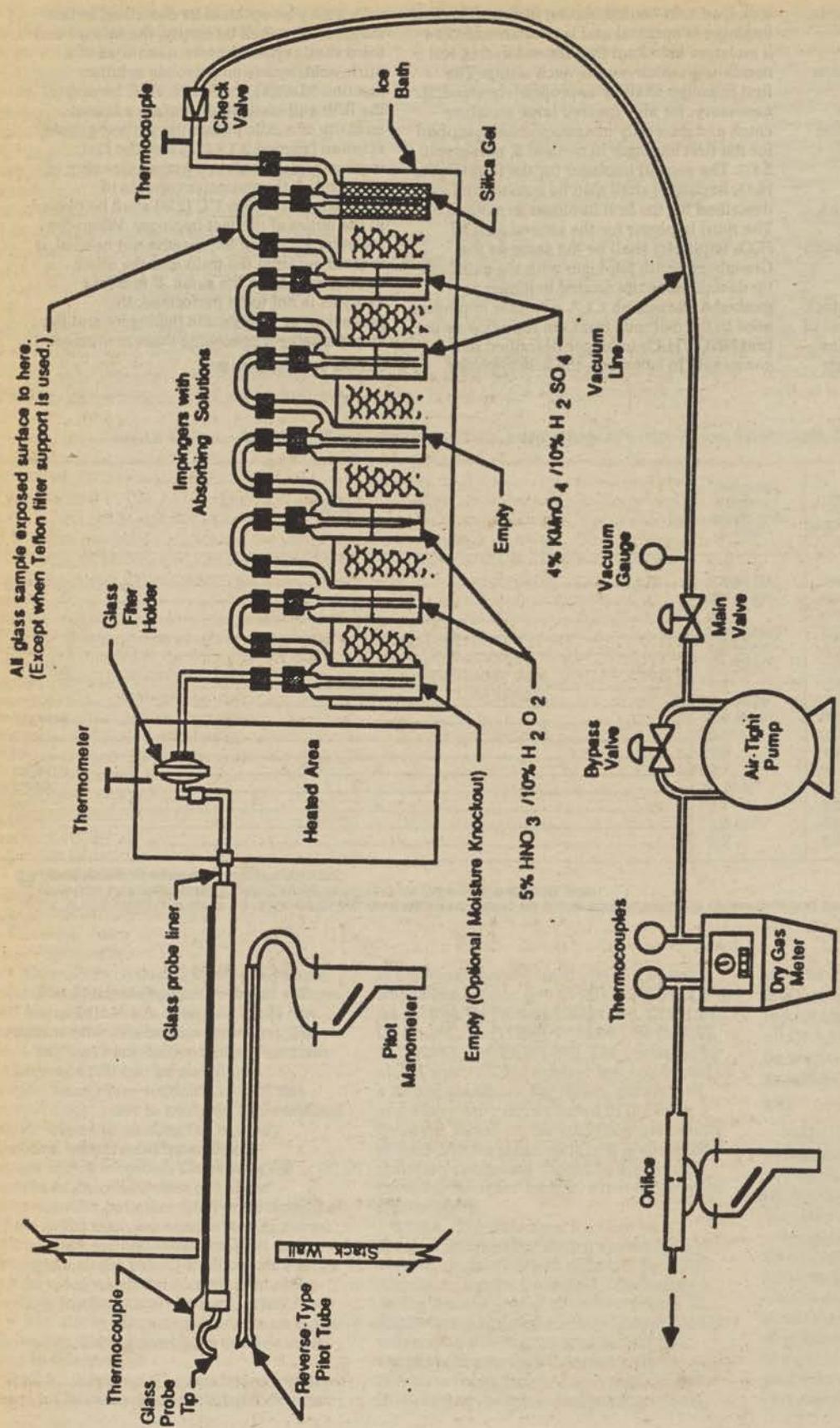
3.1.3.1.5 Condenser. The following system shall be used for the condensation and collection of gaseous metals and for determining the moisture content of the stack gas. The condensing system should consist of four to seven impingers connected in series with leak-free ground glass fittings or other

leak-free, non-contaminating fittings. The first impinger is optional and is recommended as a moisture knockout trap for use during test conditions which require such a trap. The first impinger shall be appropriately-sized, if necessary, for an expected large moisture catch and generally constructed as described for the first impinger in method 5, paragraph 2.1.7. The second impinger (or the first $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger) shall also be constructed as described for the first impinger in method 5. The third impinger (or the second $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger) shall be the same as the Greenburg Smith impinger with the standard tip described as the second impinger in method 5, paragraph 2.1.7. All other impingers used in the methods train are the same as the first $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger described in this paragraph. In summary, the first impinger

which may be optional as described in this methodology shall be empty, the second and third shall contain known quantities of a nitric acid/hydrogen peroxide solution (section 3.1.4.2.1), the fourth shall be empty, the fifth and sixth shall contain a known quantity of acidic potassium permanganate solution (section 3.1.4.2.2), and the last impinger shall contain a known quantity of silica gel. A thermometer capable of measuring to within 1°C (2°F) shall be placed at the outlet of the last impinger. When the moisture knockout impinger is not needed, it is removed from the train and the other impingers remain the same. If mercury analysis is not to be performed, the potassium permanganate impingers and the empty impinger preceding them are removed.

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3.1.3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as method 5, sections 2.1.8 through 2.1.10, respectively.

3.1.3.1.7 Teflon Tape. For capping openings and sealing connections, if necessary, on the sampling train.

3.1.3.2 Sample Recovery. Same as method 5, sections 2.2.1 through 2.2.8 (Nonmetallic Probe-Liner and Probe-Nozzle Brushes or Swabs, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.1.3.2.1 Nonmetallic Probe-Liner and Probe-Nozzle Brushes or Swabs. For quantitative recovery of materials collected in the front half of the sampling train: Description of acceptable all-Teflon component brushes or swabs is to be included in EPA's Emission Measurement Technical Information Center (EMTIC) files.

3.1.3.2.2 Sample Storage Containers. Glass bottles with Teflon-lined caps which are non-reactive to the oxidizing solutions, with a capacity of 1000- and 500-ml, shall be used for KMnO₄-containing samples and blanks. Polyethylene bottles may be used for other sample types.

3.1.3.2.3 Graduated Cylinder. Glass or equivalent.

3.1.3.2.4 Funnel. Glass or equivalent.

3.1.3.2.5 Labels. For identification of samples.

3.1.3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.1.3.3 Sample Preparation and Analysis. For the analysis, the following equipment is needed:

3.1.3.3.1 Volumetric Flasks, 100-ml, 250-ml, and 1000-ml. For preparation of standards and sample dilution.

3.1.3.3.2 Graduated Cylinders. For preparation of reagents.

3.1.3.3.3 Parr[®] Bombs or Microwave Pressure Relief Vessels with Capping Station (GEM Corporation model or equivalent).

3.1.3.3.4 Beakers and Watchglasses. 250-ml beakers for sample digestion with watchglasses to cover the tops.

3.1.3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.1.3.3.6 Filter Funnel. For holding filter paper.

3.1.3.3.7 Whatman 541 Filter Paper (or equivalent). For filtration of digested samples.

3.1.3.3.8 Disposable Pasteur Pipets and Bulbs.

3.1.3.3.9 Volumetric Pipets.

3.1.3.3.10 Analytical Balance. Accurate to within 0.1 mg.

3.1.3.3.11 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures.

3.1.3.3.12 Hot Plates.

3.1.3.3.13 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.1.3.3.14 Graphite Furnace Attachment. With antimony, arsenic, cadmium, lead,

selenium, thallium hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). (Same as EPA SW-846 methods 7041 (antimony), 7060 (arsenic), 7131 (cadmium), 7421 (lead), 7740 (selenium), and 7841 (thallium)).

3.1.3.13.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL. The equipment needed for the cold vapor mercury attachment includes an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp should be capable of raising the ambient temperature at the quartz cell by 10 °C such that no condensation forms on the wall of the quartz cell. (Same as EPA method 7470.)

3.1.3.13.14 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. (Same as EPA method 6010.)

3.1.4 Reagents

The complexity of this methodology is such that to obtain reliable results, the testers (including analysts) should be experienced and knowledgeable in source sampling, in handling and preparing (including mixing) reagents as described, and using adequate safety procedures and protective equipment in performing this method, including sampling, mixing reagents, digestions, and analyses. Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available; otherwise, use the best available grade.

3.1.4.1 Sampling. The reagents used in sampling are as follows:

3.1.4.1.1 Filters. The filters shall contain less than 1.3 µg/in² of each of the metals to be measured. Analytical results provided by filter manufacturers are acceptable. However, if no such results are available, filter blanks must be analyzed for each target metal prior to emission testing. Quartz fiber or glass fiber (which meet the requirement of containing less than 1.3 µg/in² of each metal) filters without organic binders shall be used. The filters should exhibit at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM Standard Method D2986-71 (incorporated by reference). For particulate determination in sources containing SO₂ or SO₃, the filter material must be of a type that is unreactive to SO₂ or SO₃, as described in EPA method 5. Quartz fiber filters meeting these requirements are recommended for use in this method.

3.1.4.1.2 Water. To conform to ASTM Specification D1193-77, Type II (incorporated by reference). If necessary, analyze the water for all target metals prior to field use. All target metal concentrations should be less than 1 ng/ml.

3.1.4.1.3 Nitric Acid. Concentrated. Baker Instra-analyzed or equivalent.

3.1.4.1.4 Hydrochloric Acid. Concentrated. Baker Instra-analyzed or equivalent.

3.1.4.1.5 Hydrogen Peroxide, 30 Percent (V/V).

3.1.4.1.6 Potassium Permanganate.

3.1.4.1.7 Sulfuric Acid. Concentrated.

3.1.4.1.8 Silica Gel and Crushed Ice. Same as method 5, sections 3.1.2 and 3.1.4, respectively.

3.1.4.2 Pretest Preparation for Sampling Reagents.

3.1.4.2.1 Nitric Acid (HNO₃)/Hydrogen Peroxide (H₂O₂) Absorbing Solution, 5 Percent HNO₃/10 Percent H₂O₂. Carefully with stirring, add 50 ml of concentrated HNO₃ to a 1000-ml volumetric flask containing approximately 500 ml of water, and then, carefully with stirring, add 333 ml of 30 percent H₂O₂. Dilute to volume (1000 ml) with water. Mix well. The reagent shall contain less than 2 ng/ml of each target metal.

3.1.4.2.2 Acidic Potassium Permanganate (KMnO₄) Absorbing Solution, 4 Percent KMnO₄ (W/V), 10 Percent H₂SO₄ (V/V). Prepare fresh daily. Mix carefully, with stirring, 100 ml of concentrated H₂SO₄ into 800 ml of water, and add water with stirring to make a volume of 1 L. This solution is 10 percent H₂SO₄ (V/V). Dissolve, with stirring, 40 g of KMnO₄ into 10 percent H₂SO₄ (V/V) and add 10 percent H₂SO₄ (V/V) with stirring to make a volume of 1 L. This is the acidic potassium permanganate absorbing solution. Prepare and store in glass bottles to prevent degradation. The reagent shall contain less than 2 ng/ml of Hg.

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottle; these bottles shall not be fully filled and shall be vented both to relieve potential excess pressure and prevent explosion due to pressure buildup. Venting is required, but should not allow contamination of the sample; a No. 70-72 hole drilled in the container cap and Teflon liner has been used.

3.1.4.2.3 Nitric Acid, 0.1 N. With stirring, add 6.3 ml of concentrated HNO₃ (70 percent) to a flask containing approximately 900 ml of water. Dilute to 1000 ml with water. Mix well. The reagent shall contain less than 2 ng/ml of each target metal.

3.1.4.2.4 Hydrochloric Acid (HCl), 8 N.

Make the desired volume of 8 N HCl in the following proportions. Carefully with stirring, add 690 ml of concentrated HCl to a flask containing 250 ml of water. Dilute to 1000 ml with water. Mix well. The reagent shall contain less than 2 ng/ml of Hg.

3.1.4.3 Glassware Cleaning Reagents.

3.1.4.3.1 Nitric Acid, Concentrated. Fisher ACS grade or equivalent.

3.1.4.3.2 Water. To conform to ASTM Specifications D1193-77, Type II.

3.1.4.3.3 Nitric Acid, 10 Percent (V/V). With stirring, add 500 ml of concentrated HNO₃ to a flask containing approximately 4000 ml of water. Dilute to 5000 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

3.1.4.4 Sample Digestion and Analysis Reagents.

3.1.4.4.1 Hydrochloric Acid, Concentrated.

3.1.4.4.2 Hydrofluoric Acid, Concentrated.

3.1.4.4.3 Nitric Acid, Concentrated. Baker Instra-analyzed or equivalent.

3.1.4.4.4 Nitric Acid, 50 Percent (V/V). With stirring, add 125 ml of concentrated HNO₃ to 100 ml of water. Dilute to 250 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

3.1.4.4.5 Nitric Acid, 5 Percent (V/V). With stirring, add 50 ml of concentrated HNO₃ to 800 ml of water. Dilute to 1000 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

3.1.4.4.6 Water. To conform to ASTM Specifications D1193-77, Type II.

3.1.4.4.7 Hydroxylamine Hydrochloride and Sodium Chloride Solution. See EPA method 7470 for preparation.

3.1.4.4.8 Stannous Chloride. See method 7470.

3.1.4.4.9 Potassium Permanganate, 5 Percent (W/V). See method 7470.

3.1.4.4.10 Sulfuric Acid, Concentrated.

3.1.4.4.11 Nitric Acid, 50 Percent (V/V).

3.1.4.4.12 Potassium Persulfate, 5 Percent (W/V). See Method 7470.

3.1.4.4.13 Nickel Nitrate, Ni(NO₃)₂, 6H₂O.

3.1.4.4.14 Lanthanum, Oxide, La₂O₃.

3.1.4.4.15 AAS Grade Hg Standard, 1000 µg/ml.

3.1.4.4.16 AAS Grade Pb Standard, 1000 µg/ml.

3.1.4.4.17 AAS Grade As Standard, 1000 µg/ml.

3.1.4.4.18 AAS Grade Cd Standard, 1000 µg/ml.

3.1.4.4.19 AAS Grade Cr Standard, 1000 µg/ml.

3.1.4.4.20 AAS Grade Sb Standard, 1000 µg/ml.

3.1.4.4.21 AAS Grade Ba Standard, 1000 µg/ml.

3.1.4.4.22 AAS Grade Be Standard, 1000 µg/ml.

3.1.4.4.23 AAS Grade Cu Standard, 1000 µg/ml.

3.1.4.4.24 AAS Grade Mn Standard, 1000 µg/ml.

3.1.4.4.25 AAS Grade Ni Standard, 1000 µg/ml.

3.1.4.4.26 AAS Grade P Standard, 1000 µg/ml.

3.1.4.4.27 AAS Grade Se Standard, 1000 µg/ml.

3.1.4.4.28 AAS Grade Ag Standard, 1000 µg/ml.

3.1.4.4.29 AAS Grade Tl Standard, 1000 µg/ml.

3.1.4.4.30 AAS Grade Zn Standard, 1000 µg/ml.

3.1.4.4.31 AAS Grade Al Standard, 1000 µg/ml.

3.1.4.4.32 AAS Grade Fe Standard, 1000 µg/ml.

3.1.4.4.33 The metals standards may also be made from solid chemicals as described in EPA Method 200.7, EPA SW-846 Method 7470 or Standard Methods for the Analysis of Water and Wastewater, 15th Edition, Method 303F should be referred to for additional information on mercury standards.

3.1.4.4.34 Mercury Standards and Quality Control Samples. Prepare fresh weekly a 10 µg/ml intermediate mercury standard by adding 5 ml of 1000 µg/ml mercury stock solution to a 500-ml volumetric flask; dilute with stirring to 500 ml by first carefully adding 20 ml of 15 percent HNO₃ and then adding water to the 500-ml volume. Mix well.

Prepare a 200 ng/ml working mercury standard solution fresh daily: Add 5 ml of the 10 µg/ml intermediate standard to a 250-ml volumetric flask and dilute to 250 ml with 5 ml of 4 percent KMnO₄, 5 ml of 15 percent HNO₃, and then water. Mix well. At least six separate aliquots of the working mercury standard solution should be used to prepare the standard curve. These aliquots should contain 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the working standard solution containing 0, 200, 400, 600, 800, and 1000 ng mercury, respectively. Quality control samples should be prepared by making a separate 10 µg/ml standard and diluting until in the range of the calibration.

3.1.4.4.35 ICAP Standards and Quality Control Samples. Calibration standards for ICAP analysis can be combined into four different mixed standard solutions as shown below.

MIXED STANDARD SOLUTIONS FOR ICAP ANALYSIS

Solution	Elements
I.....	As, Be, Cd, Mn, Pb, Se, Zn.
II.....	Ba, Cu, Fe.
III.....	Al, Cr, Ni.
IV.....	Ag, P, Sb, Ti.

Prepare these standards by combining and diluting the appropriate volumes of the 1000 µg/ml solutions with 5 percent nitric acid. A minimum of one standard and a blank can be used to form each calibration curve. However, a separate quality control sample spiked with known amounts of the target metals in quantities in the midrange of the calibration curve should be prepared. Suggested standard levels are 25 µg/ml for Al, Cr, and Pb, 15 µg/ml for Fe, and 10 µg/ml for the remaining elements. Standards containing less than 1 µg/ml of metal should be prepared daily. Standards containing greater than 1 µg/ml of metal should be stable for a minimum of 1 to 2 weeks.

3.1.4.4.36 Graphite Furnace AAS Standards. Antimony, arsenic, cadmium, lead, selenium, and thallium. Prepare a 10 µg/ml standard by adding 1 ml of 1000 µg/ml standard to a 100-ml volumetric flask. Dilute with stirring to 100 ml with 10 percent nitric acid. For graphite furnace AAS, the standards must be matrix matched. Prepare a 100 ng/ml standard by adding 1 ml of the 10 µg/ml standard to a 110-ml volumetric flask and dilute to 100 ml with the appropriate matrix solution. Other standards should be prepared by dilution of the 100 ng/ml standards. At least five standards should be used to make up the standard curve. Suggested levels are 0, 10, 50, 75, and 100 ng/ml. Quality control samples should be prepared by making a separate 10 µg/ml standard and diluting until it is in the range of the samples. Standards containing less than 1 µg/ml of metal should be prepared daily. Standards containing greater than 1 µg/ml of metal should be stable for a minimum of 1 to 2 weeks.

3.1.4.4.37 Matrix Modifiers.

3.1.4.4.37.1 Nickel Nitrate, 1 Percent (V/V). Dissolve 4.956 g of Ni(NO₃)₂, 6H₂O in

approximately 50 ml of water in a 100-ml volumetric flask. Dilute to 100 ml with water.

3.1.4.4.37.2 Nickel Nitrate, 0.1 Percent (V/V). Dilute 10 ml of the 1 percent nickel nitrate solution from section 4.4.37.1 above to 100 ml with water. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for As.

3.1.4.4.37.3 Lanthanum. Carefully dissolve 0.5864 g of La₂O₃ in 10 ml of concentrated HNO₃, and dilute the solution by adding it with stirring to approximately 50 ml of water, and then dilute to 100 ml with water. Mix well. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for Pb.

3.1.5 Procedure

3.1.5.1 Sampling. The complexity of this method is such that, to obtain reliable results, testers and analysts should be trained and experienced with the test procedures, including source sampling, reagent preparation and handling, sample handling, analytical calculations, reporting, and descriptions specifically at the beginning of and throughout section 3.1.4 and all other sections of this methodology.

3.1.5.1.1 Pretest Preparation. Follow the same general procedure given in method 5, section 4.1.1, except that, unless particulate emissions are to be determined, the filter need not be desiccated or weighed. All sampling train glassware should first be rinsed with hot tap water and then washed in hot soapy water. Next, glassware should be rinsed three times with tap water, followed by three additional rinses with water. All glassware should then be soaked in a 10 percent (V/V) nitric acid solution for a minimum of 4 hours, rinsed three times with water, rinsed a final time with acetone, and allowed to air dry. All glassware openings where contamination can occur should be covered until the sampling train is assembled for sampling.

3.1.5.1.2 Preliminary Determinations. Same as method 5, section 4.1.2.

3.1.5.1.3 Preparation of Sampling Train. Follow the same general procedures given in method 5, section 4.1.3, except place 100 ml of the nitric acid/hydrogen peroxide solution (section 3.1.4.2.1) in each of the two HNO₃/H₂O₂ impingers as shown in Figure 3.1-1 (normally the second and third impingers), place 100 ml of the acidic potassium permanganate absorbing solution (section 3.1.4.2.2) in each of the two permanganate impingers as shown in Figure A-1, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the last impinger. Alternatively, the silica gel may be weighed directly in the impinger just prior to train assembly.

Several options are available to the tester based on the sampling requirements and conditions. The use of an empty first impinger can be eliminated if the moisture to be collected in the impingers will be less than approximately 100 ml. If necessary, use as applicable to this methodology the procedure described in section 7.1.1 of EPA method 101A, 40 CFR part 61, appendix B, to maintain the desired color in the last permanganate impinger.

Retain for reagent blanks volumes of the nitric acid/hydrogen peroxide solution per section 3.1.5.2.9 of this method and of the acidic potassium permanganate solution per section 3.1.5.2.10. These reagent blanks should be labeled and analyzed as described in section 3.1.7. Set up the sampling train as shown in Figure 3.1-1, or if mercury analysis is not to be performed in the train, then it should be modified by removing the two permanganate impingers and the impinger preceding the permanganate impingers. If necessary to ensure leak-free sampling train connections and prevent contamination Teflon tape or other non-contaminating material should be used instead of silicone grease.

Precaution: Extreme care should be taken to prevent contamination within the train. Prevent the mercury collection reagent (acidic potassium permanganate) from contacting any glassware of the train which is washed and analyzed for Mn. Prevent hydrogen peroxide from mixing with the acidic potassium permanganate.

Mercury emissions can be measured, alternatively, in a separate train which measures only mercury emissions by using EPA method 101A with the modifications described below (and with the further modification that the permanganate containers shall be processed as described in the precaution in section 3.1.4.2.2 and the note in section 3.1.5.2.5 of this methodology). This alternative method is applicable for measurement of mercury emissions, and it may be of special interest to sources which must measure both mercury and manganese emissions.

Section 7.2.1 of method 101A shall be modified as follows after the 250 to 400-ml KMnO₄ rinse:

To remove any precipitated material and any residual brown deposits on the glassware following the permanganate rinse, rinse with approximately 100 ml of deionized distilled water, and add this water rinse carefully assuring transfer of all loose precipitated materials from the three permanganate impingers into the permanganate Container No. 1. If no visible deposits remain after this water rinse, do not rinse with 8 N HCl. However, if deposits do remain on the glassware after this water rinse, wash the impinger surfaces with 25 ml of 8 N HCl, and place the wash in a separate sample container labeled Container No. 1.A. containing 200 ml of water as follows. Place 200 ml of water in a sample container labeled

Container No. 1.A. Wash the impinger walls and stem with the HCl by turning the impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 ml of 8 N HCl for rinsing *all permanganate impingers combined*. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse, etc. Finally, pour the 25 ml of 8 N HCl rinse carefully with stirring into Container No. 1.A. Analyze the HCl rinse separately by carefully diluting with stirring the contents of Container No. 1.A. to 500 ml with deionized distilled water. Filter (if necessary) through Whatman 40 filter paper, and then analyze for mercury according to section 7.4, except limit the aliquot size to a maximum of 10 ml. Prepare and analyze a water diluted blank 8 N HCl sample by using the same procedure as that used by Container No. 1.A., except add 5 ml of 8 N HCl with stirring to 40 ml of water, and then dilute to 100 ml with water. Then analyze as instructed for the sample from Container No. 1.A. Because the previous separate permanganate solution rinse (section 7.2.1) and water rinse (as modified in these guidelines) have the capability to recover a very high percentage of the mercury from the permanganate impingers, the amount of mercury in the HCl rinse in Container No. 1.A. may be very small, possibly even insignificantly small. However, add the total of any mercury analyzed and calculated for the HCl rinse sample Container No. 1.A. to that calculated from the mercury sample from section 7.3.2 which contains the separate permanganate rinse (and water rinse as modified herein) for calculation of the total sample mercury concentration.

3.1.5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in method 5, section 4.1.4.1 (Pretest Leak-Check), section 4.1.4.2 (Leak-Checks During the Sample Run), and section 4.1.4.3 (Post-Test Leak-Checks).

3.1.5.1.5 Sampling Train Operation. Follow the procedures given in method 5, section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of method 5.

3.1.5.1.6 Calculation of Percent Isokinetic. Same as method 5, section 4.1.6.

3.1.5.2 Sample Recovery. Begin cleanup procedures as soon as the probe is removed from the stack at the end of a sampling period.

The probe should be allowed to cool prior to sample recovery. When it can be safely handled, wipe off all external particulate

matter near the tip of the probe nozzle and place a rinsed, non-contaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling. This normally causes a vacuum to form in the filter holder, thus causing the undesired result of drawing liquid from the impingers into the filter.

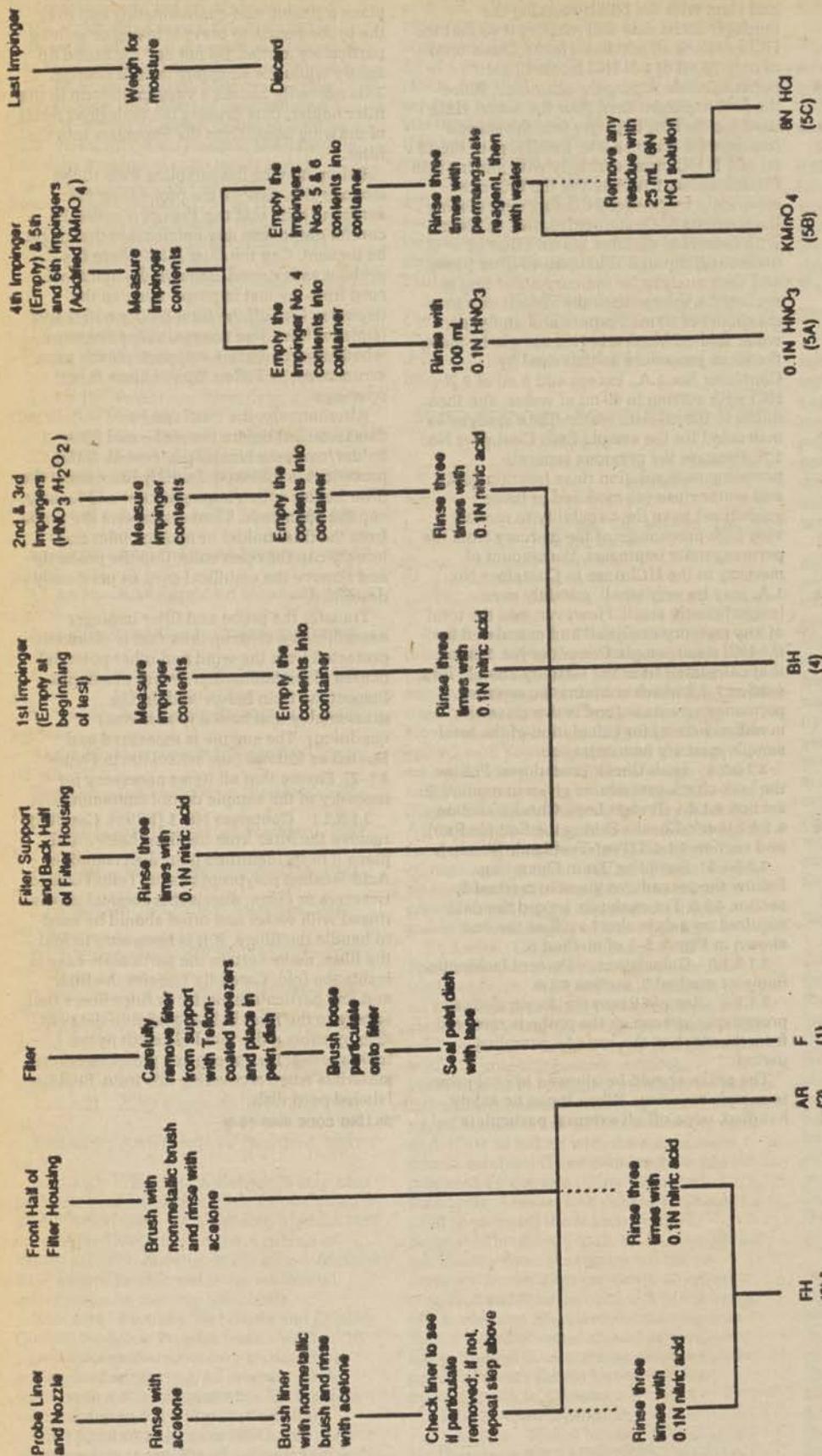
Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet. Be careful not to lose any condensate that might be present. Cap the filter inlet where the probe was fastened. Remove the umbilical cord from the last impinger and cap the impinger. Cap off the filter holder outlet and impinger inlet. Use noncontaminating caps, whether ground-glass stoppers, plastic caps, serum caps, or Teflon tape to close these openings.

Alternatively, the train can be disassembled before the probe and filter holder/oven are completely cooled, if this procedure is followed: Initially disconnect the filter holder outlet/impinger inlet and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet and loosely cap the open ends. Cap the probe tip and remove the umbilical cord as previously described.

Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions. The sample is recovered and treated as follows (see schematic in Figure 3.1-2). Ensure that all items necessary for recovery of the sample do not contaminate it.

3.1.5.2.1 Container No. 1 (Filter). Carefully remove the filter from the filter holder and place it in its identified petri dish container. Acid-washed polypropylene or Teflon coated tweezers or clean, disposable surgical gloves rinsed with water and dried should be used to handle the filters. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Carefully transfer the filter and any particulate matter or filter fibers that adhere to the filter holder gasket to the petri dish by using a dry (acid-cleaned) nylon bristle brush. Do not use any metal-containing materials when recovering this train. Seal the labeled petri dish.

BILLING CODE 6560-50-M



* Number in parentheses indicates container number

Figure 3.1-2 Sample recovery scheme.

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BILLING CODE 6560-50-C

3.1.5.2.2 Container No. 2 (Acetone Rinse).

Note: Perform section 3.1.5.2.2 only if determination of particulate emissions are desired in addition to metals emissions. If only metals emissions are desired, skip section 3.1.5.2.2 and go to section 3.1.5.2.3. Taking care to see that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting (plastic such as Teflon, polypropylene, etc. fittings are recommended to prevent contamination by metal fittings; further, if desired, a single glass piece consisting of a combined probe tip and probe liner may be used, but such a single glass piece is *not* a requirement of this methodology), probe liner, and front half of the filter holder by washing these components with 100 ml of acetone and placing the wash in a glass container.

Note: The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis. Perform the acetone rinses as follows: Carefully remove the probe nozzle and clean the inside surface by rinsing with acetone from a wash bottle and brushing with a nonmetallic brush. Brush until the acetone rinse shows no visible particles, after which make a final rinse of the inside surface with acetone.

Brush and rinse the sample-exposed, inside parts of the fitting with acetone in a similar way until no visible particles remain.

Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Allow the acetone to drain from the lower end into the sample container. A funnel may be used to aid in transferring liquid washings to the container. Follow the acetone rinse with a nonmetallic probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action through the probe; hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed through the probe three times or more until none remains in the probe liner on visual inspection. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

Clean the inside of the front half of the filter holder by rubbing the surfaces with a nonmetallic nylon bristle brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. After all acetone washings and particulate matter have been collected in the sample container tighten the lid on the sample container so that acetone will not

leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether or not leakage occurred during transport. Label the container clearly to identify its contents.

3.1.5.2.3 Container No. 3 (Probe Rinse).
Keep the probe assembly clean and free from contamination as described in section 3.1.5.2.2 of this method during the 0.1 N nitric acid rinse described below. Rinse the probe nozzle and fitting probe liner, and front half of the filter holder thoroughly with 100 ml of 0.1 N nitric acid and place the wash into a sample storage container.

Note: The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Perform the rinses as applicable and generally as described in method 12, section 5.2.2. Record the volume of the combined rinse. Mark the height of the fluid level on the outside of the storage container and use this mark to determine if leakage occurs during transport. Seal the container and clearly label the contents. Finally, rinse the nozzle, probe liner, and front half of the filter holder with water followed by acetone and discard these rinses.

3.1.5.2.4 Container No. 4 (Impingers 1 through 3, HNO₃/H₂O₂ Impingers and Moisture Knockout Impinger, when used, Contents and Rinses). Due to the potentially large quantity of liquid involved, the tester may place the impinger solutions from impingers 1 through 3 in more than one container. Measure the liquid in the first three impingers volumetrically to within 0.5 ml using a graduated cylinder. Record the volume of liquid present. This information is required to calculate the moisture content of the sampled flue gas. Clean each of the first three impingers, the filter support, the back half of the filter housing, and connecting glassware by thoroughly rinsing with 100 ml of 0.1 N nitric acid using the procedure as applicable and generally as described in method 12, section 5.2.4.

Note: The use of exactly 100 ml of 0.1 N nitric acid rinse is necessary for the subsequent blank correction procedures. Combine the rinses and impinger solutions, measure and record the volume. Mark the height of the fluid level on the outside of the container to determine if leakage occurs during transport. Seal the container and clearly label the contents.

3.1.5.2.5 Container Nos. 5A, 5B, and 5C.
5A (0.1 N HNO₃), 5B (KMnO₄/H₂SO₄ absorbing solution), and 5C (8 N HCl rinse and dilution). (As described previously at the end of section 3.1.3.1.5 of this method, if mercury is not being measured in this train, then impingers 4, 5, and 6, as shown in Figure 3.1-2, are not necessary and may be eliminated.) Pour all the liquid, if any, from the impinger which was empty at the start of the run and which immediately precedes the two permanganate impingers (normally impinger No. 4) into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place the liquid in Sample Container No. 5A. Rinse the impinger (No. 4) with 100 ml of 0.1 N HNO₃ and place this into Container No. 5A.

Pour all the liquid from the two permanganate impingers into a graduated

cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place this KMnO₄ absorbing solution stack sample from the two permanganate impingers into Container No. 5B. Using 100 ml total of fresh acidified potassium permanganate solution, rinse the two permanganate impingers and connecting glass pieces a minimum of three times and place the rinses into Container No. 5B, carefully ensuring transfer of all loose precipitated materials from the two impingers into Container No. 5B. Using 100 ml total of water, rinse the permanganate impingers and connecting glass pieces a minimum of three times, and place the rinses into Container 5B, carefully ensuring transfer of all loose precipitated material, if any, from the two impingers into Container No. 5B. Mark the height of the fluid level on the outside of the bottle to determine if leakage occurs during transport. See the following note and the precaution in paragraph 3.1.4.2.2 and properly prepare the bottle and clearly label the contents.

Note: Due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottles. These bottles shall not be completely filled and shall be vented to relieve potential excess pressure. Venting is required. A No. 70-72 hole drilled in the container cap and Teflon liner has been used.

If no visible deposits remain after the above described water rinse, do not rinse with 8 N HCl. However, if deposits do remain on the glassware after this water rinse, wash the impinger surfaces with 25 ml of 8 N HCl, and place the wash in a separate sample container labeled Container No. 5C containing 200 ml of water as follows: Place 200 ml of water in a sample container labeled Container No. 5C. Wash the impinger walls and stem with the HCl by turning the impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 ml of 8 N HCl for rinsing both permanganate impingers combined. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse. Finally, pour the 25 ml of 8 N HCl rinse carefully with stirring into Container No. 5C. Mark the height of the fluid level on the outside of the bottle to determine if leakage occurs during transport.

3.1.5.2.6 Container No. 6 (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal. The tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger.

The small amount of particles that may adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel since weight gained in the silica gel impinger is used for moisture calculations. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g.

3.1.5.2.7 Container No. 7 (Acetone Blank). If particulate emissions are to be determined, at least once during each field test, place a 100-ml portion of the acetone used in the sample recovery process into a labeled container for use in the front-half field reagent blank. Seal the container.

3.1.5.2.8 Container No. 8A (0.1 N Nitric Acid Blank). At least once during each field test, place 300 ml of the 0.1 N nitric acid solution used in the sample recovery process into a labeled container for use in the front-half and back-half field reagent blanks. Seal the container. Container No. 8B (water blank). At least once during each field test, place 100 ml of the water used in the sample recovery process into a labeled Container No. 8B. Seal the container.

3.1.5.2.9 Container No. 9 (5% Nitric Acid/10% Hydrogen Peroxide Blank). At least once during each field test, place 200 ml of the 5% nitric acid/10% hydrogen peroxide solution used as the nitric acid impinger reagent into a labeled container for use in the back-half field reagent blank. Seal the container.

3.1.5.2.10 Container No. 10 (Acidified Potassium Permanganate Blank). At least once during each field test, place 100 ml of the acidified potassium permanganate

solution used as the impinger solution and in the sample recovery process into a labeled container for use in the back-half field reagent blank for mercury analysis. Prepare the container as described in section 3.1.5.2.5.

Note: Due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottles. These bottles shall not be completely filled and shall be vented to relieve potential excess pressure. Venting is required. A No. 70-72 hole drilled in the container cap and Teflon liner has been used.

3.1.5.2.11 Container No. 11 (8 N HCl Blank). At least once during each field test, perform both of the following: Place 200 ml of water into a sample container. Pour 25 ml of 8N HCl carefully with stirring into the 200 ml of water in the container. Mix well and seal the container.

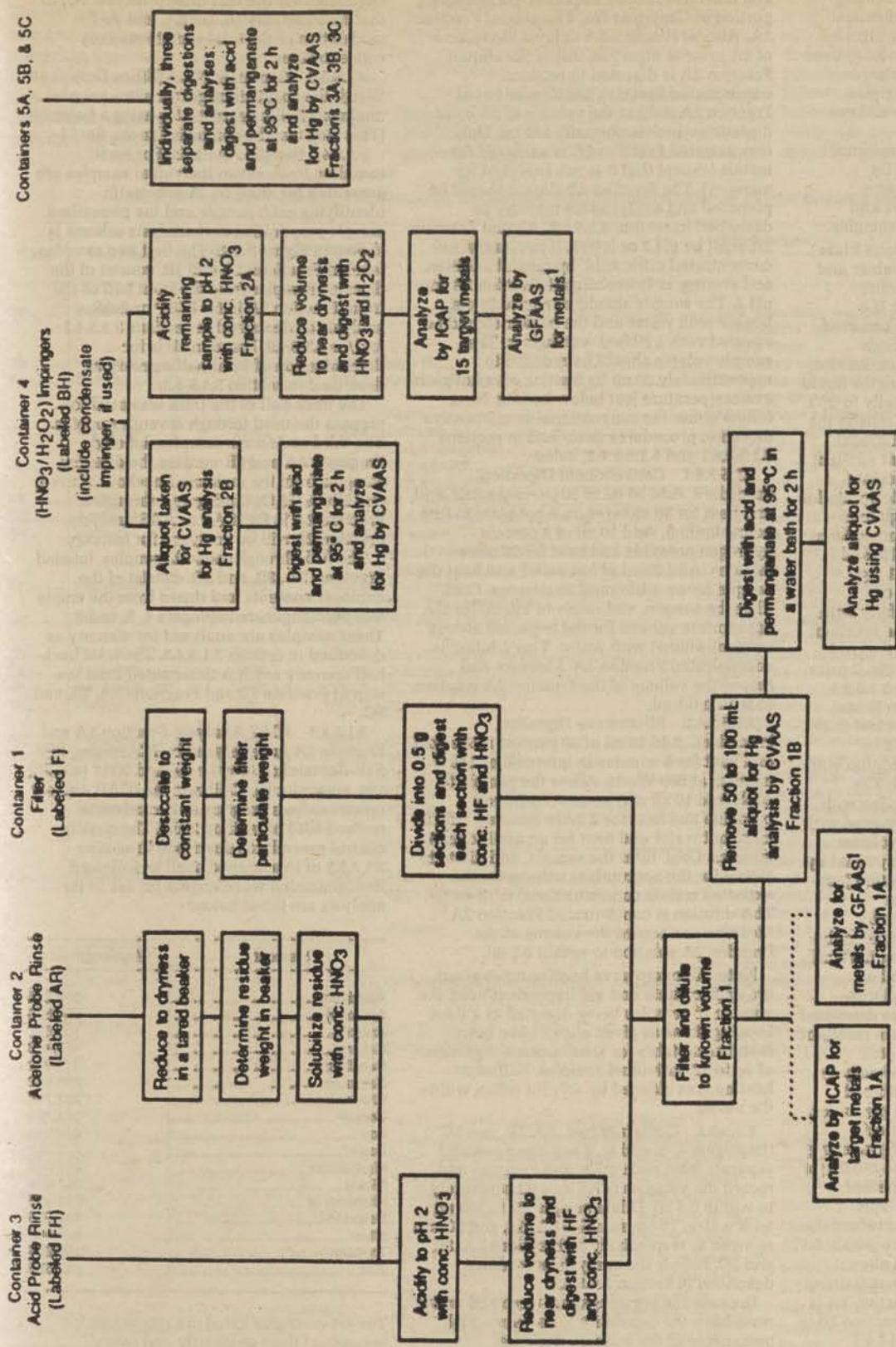
3.1.5.2.12 Container No. 12 (Filter Blank). Once during each field test, place three unused blank filters from the same lot as the sampling filters in a labeled petri dish. Seal the petri dish. These will be used in the front-half field reagent blank.

3.1.5.3 Sample Preparation. Note the level of the liquid in each of the containers and determine if any sample was lost during

shipment. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. A diagram illustrating sample preparation and analysis procedures for each of the sample train components is shown in Figure 3.1-3.

3.1.5.3.1 Container No. 1 (Filter). If particulate emissions are being determined, then desiccate the filter and filter catch without added heat and weigh to a constant weight as described in section 4.3 of method 5. For analysis of metals, divide the filter with its filter catch into portions containing approximately 0.5 g each and place into the analyst's choice of either individual microwave pressure relief vessels or Parr^{*} Bombs. Add 6 ml of concentrated nitric acid and 4 ml of concentrated hydrofluoric acid to each vessel. For microwave heating, microwave the sample vessels for approximately 12-15 minutes in intervals of 1 to 2 minutes at 600 Watts. For conventional heating, heat the Parr Bombs at 140°C (285°F) for 6 hours. Cool the samples to room temperature and combine with the acid digested probe rinse as required in section 3.1.5.3.3, below.

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¹ Analysis by AAS for metals found at less than 2 ug/mL in digestate solution, if desired. Or analyze for each metal by AAS, if desired.

Figure 3.1-3 Sample preparation and analysis scheme.

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Notes: 1. Suggested microwave heating times are approximate and are dependent upon the number of samples being digested. Twelve to 15 minute heating times have been found to be acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by sorbent reflux within the vessel.

2. If the sampling train uses an optional cyclone, the cyclone catch should be prepared and digested using the same procedures described for the filters and combined with the digested filter samples.

3.1.5.3.2 Container No. 2 (Acetone Rinse). Note the level of liquid in the container and confirm on the analysis sheet whether leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in this container either volumetrically to ± 1 ml or gravimetrically to ± 0.5 g. Transfer the contents to an acid-cleaned, tared 250-ml beaker and evaporate to dryness at ambient temperature and pressure. If particulate emissions are being determined, desiccate for 24 hours without added heat, weigh to a constant weight according to the procedures described in section 4.3 of method 5, and report the results to the nearest 0.1 mg. Redissolve the residue with 10 ml of concentrated nitric acid and, carefully with stirring, quantitatively combine the resultant sample including all liquid and any particulate matter with Container No. 3 prior to beginning the following section 3.1.5.3.3.

3.1.5.3.3 Container No. 3 (Probe Rinse). The pH of this sample shall be 2 or lower. If the pH is higher, the sample should be acidified to pH 2 by the careful addition with stirring of concentrated nitric acid. The sample should be rinsed into a beaker with water and the beaker should be covered with a ribbed watchglass. The sample volume should be reduced to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Digest the sample in microwave vessels or Parr® Bombs by quantitatively transferring the sample to the vessel or bomb, by carefully adding the 6 ml of concentrated nitric acid and 4 ml of concentrated hydrofluoric acid and then continuing to follow the procedures described in section 3.1.5.3.1; then combine the resultant sample directly with the acid digested portions of the filter prepared previously in section 3.1.5.3.1. The resultant combined sample is referred to as Fraction 1 precursor. Filter the combined solution of the acid digested filter and probe rinse samples using Whatman 541 filter paper. Dilute to 300 ml (or the appropriate volume for the expected metals concentration) with water. This dilution is Fraction 1. Measure and record the volume of the Fraction 1 solution to within 0.1 ml. Quantitatively remove a 50-ml aliquot and label as Fraction 1B. Label the remaining 250-ml portion as Fraction 1A. Fraction 1A is used for ICAP or AAS analysis. Fraction 1B is used for the determination of front-half mercury.

3.1.5.3.4 Container No. 4 (Impingers 1-3). Measure and record the total volume of this sample (Fraction 2) to within 0.5 ml. Remove a 75- to 100-ml aliquot for mercury analysis

and label as Fraction 2B. Label the remaining portion of Container No. 4 as aliquot Fraction 2A. Aliquot Fraction 2A defines the volume of 2A *prior* to digestion. All of the aliquot Fraction 2A is digested to produce concentrated Fraction 2A. Concentrated Fraction 2A defines the volume of 2A *after* digestion which is normally 150 ml. Only concentrated Fraction 2A is analyzed for metals (except that it is not analyzed for mercury). The Fraction 2B aliquot should be prepared and analyzed for mercury as described in section 3.1.5.4.3. Aliquot Fraction 2A shall be pH 2 or lower. If necessary, use concentrated nitric acid, by careful addition and stirring, to lower aliquot Fraction 2A to pH 2. The sample should be rinsed into a beaker with water and the beaker should be covered with a ribbed watchglass. The sample volume should be reduced to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Next follow either the conventional or microwave digestion procedures described in sections 3.1.5.3.4.1 and 3.1.5.3.4.2, below.

3.1.5.3.4.1 Conventional Digestion

Procedure. Add 30 ml of 50 percent nitric acid and heat for 30 minutes on a hot plate to just below boiling. Add 10 ml of 3 percent hydrogen peroxide and heat for 20 more minutes. Add 50 ml of hot water and heat the sample for an additional 20 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution is concentrated Fraction 2A. Measure and record the volume of the Fraction 2A solution to within 0.1 ml.

3.1.5.3.4.2 Microwave Digestion

Procedure. Add 10 ml of 50 percent nitric acid and heat for 6 minutes in intervals of 1 to 2 minutes at 600 Watts. Allow the sample to cool. Add 10 ml of 3 percent hydrogen peroxide and heat for 2 more minutes. Add 50 ml of hot water and heat for an additional 5 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution is concentrated Fraction 2A. Measure and record the volume of the Fraction 2A solution to within 0.1 ml.

Note: All microwave heating times given are approximate and are dependent upon the number of samples being digested at a time. Heating times as given above have been found acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by solvent reflux within the vessel.

3.1.5.3.5 Container Nos. 5A, 5B, and 5C (Impingers 4, 5, and 6). Keep these samples separate from each other and measure and record the volumes of 5A and 5B separately to within 0.5 ml. Dilute sample 5C to 500 ml with water. These samples 5A, 5B, and 5C are referred to respectively as Fractions 3A, 3B, and 3C. Follow the analysis procedures described in section 3.1.5.4.3.

Because the permanganate rinse and water rinse have the capability to recover a high percentage of the mercury from the permanganate impingers, the amount of mercury in the HCl rinse (Fraction 3C) may be very small, possibly even insignificantly small. However, as instructed in this method, add the total of any mercury measured in and

calculated for the HCl rinse (Fraction 3C) to that for Fractions 1B, 2B, 3A, and 3B for calculation of the total sample mercury concentration.

3.1.5.3.6 Container No. 6 (Silica Gel).

Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance. (This step may be conducted in the field.)

3.1.5.4 Sample Analysis.

For each sampling train, seven individual samples are generated for analysis. A schematic identifying each sample and the prescribed sample preparation and analysis scheme is shown in Figure 3.1-3. The first two samples, labeled Fractions 1A and 1B, consist of the digested samples from the front half of the train. Fraction 1A is for ICAP or AAS analysis as described in sections 3.1.5.4.1 and/or 3.1.5.4.2. Fraction 1B is for determination of front-half mercury as described in section 3.1.5.4.3.

The back half of the train was used to prepare the third through seventh samples. The third and fourth samples, labeled Fractions 2A and 2B, contain the digested samples from the moisture knockout, if used, and $\text{HNO}_3/\text{H}_2\text{O}_2$ Impingers 1 through 3. Fraction 2A is for ICAP or AAS analysis. Fraction 2B will be analyzed for mercury.

The fifth through seventh samples, labeled Fractions 3A, 3B, and 3C, consist of the impinger contents and rinses from the empty and permanganate impingers 4, 5, and 6. These samples are analyzed for mercury as described in section 3.1.5.4.3. The total back-half mercury catch is determined from the sum of Fraction 2B and Fractions 3A, 3B, and 3C.

3.1.5.4.1 ICAP Analysis. Fraction 1A and Fraction 2A are analyzed by ICAP using EPA SW-846 method 6010 or method 200.7 (40 CFR 136, appendix C). Calibrate the ICAP, and set up an analysis program as described in method 6010 or method 200.7. The quality control procedures described in section 3.1.7.3.1 of this method shall be followed. Recommended wavelengths for use in the analysis are listed below:

Element	Wavelength (nm)
Aluminum	308.215
Antimony	206.833
Arsenic	193.696
Barium	455.403
Beryllium	313.042
Cadmium	226.502
Chromium	267.716
Copper	324.754
Iron	259.940
Lead	220.353
Manganese	257.610
Nickel	231.604
Phosphorus	214.914
Selenium	196.026
Silver	328.068
Thallium	190.864
Zinc	213.856

The wavelengths listed are recommended because of their sensitivity and overall acceptance. Other wavelengths may be substituted if they can provide the needed sensitivity and are treated with the same corrective techniques for spectral interference.

Initially, analyze all samples for the desired target metals (except mercury) plus iron and aluminum. If iron and aluminum are present in the sample, the sample may have to be diluted so that each of these elements is at a concentration of less than 50 ppm to reduce their spectral interferences on arsenic, cadmium, chromium, and lead.

Note. When analyzing samples in a hydrofluoric acid matrix, an alumina torch should be used; since all front-half samples will contain hydrofluoric acid, use an alumina torch.

3.1.5.4.2 AAS by Direct Aspiration and/or Graphite Furnace. If analysis of metals in Fraction 1A and Fraction 2A using graphite furnace or direct aspiration AAS is desired,

Table 3.1-2 should be used to determine which techniques and methods should be applied for each target metal. Table 3.1-2 should also be consulted to determine possible interferences and techniques to be followed for their minimization. Calibrate the instrument according to section 3.1.6.3 and follow the quality control procedures specified in section 3.1.7.3.2.

TABLE 3.1-2—APPLICABLE TECHNIQUES, METHODS, AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS

Metal	Technique	SW-846 Method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Sb	Aspiration	7040	217.6	1000 mg/mL Pb Ni, Cu, or acid.	Use secondary wavelength of 231.1 nm; match sample & standards' acid concentration or use nitrous oxide/acetylene flame.
Sb	Furnace	7041	217.6	High Pb.	Secondary wavelength or Zeeman correction.
As	Furnace	7060	193.7	Arsenic volatilization.	Spiked samples and add nickel nitrate solution to digestates prior to analysis.
Ba	Aspiration	7080	553.6	Aluminum.	Use Zeeman background correction.
Be	Aspiration	7090	234.9	Calcium.	High hollow cathode current and narrow band set.
Be	Furnace	7091	234.9	Barium ionization.	2 mL of KC1 per 100 mL of sample.
Cd	Aspiration	7130	228.8	500 ppm Al.	Add 0.1% fluoride.
Cd	Furnace	7131	228.8	High Mg and Si.	Use method of standard additions.
Cr	Aspiration	7190	357.9	Be in optical path.	Optimize parameters to minimize effects.
Cr	Furnace	7191	357.9	Absorption and light scattering.	Background correction is required.
Cu	Aspiration	7210	324.7	As above.	As above.
Fe	Aspiration	7380	248.3	Excess chloride.	Ammonium phosphate used as a matrix modifier.
Pb	Aspiration	7420	283.3	Pipet tips.	Use cadmium-free tips.
Pb	Furnace	7421	283.3	Alkali metal.	KC1 ionization suppressant in samples and standards.
Mn	Aspiration	7460	279.5	Absorption and scatter.	Consult manufacturer's literature.
Ni	Aspiration	7520	232.0	200 mg/L Ca and P.	All calcium nitrate for a known constant effect and to eliminate effect of phosphate.
Se	Furnace	7740	196.0	Absorption and scatter.	Consult manufacturer's manual.
Ag	Aspiration	7760	328.1	Contamination.	Great care taken to avoid contamination.
Tl	Aspiration	7840	276.8	217.0 nm alternate.	Background correction required.
Tl	Furnace	7841	276.8	403.1 nm alternate.	Matrix modifier, add 10 μ L of phosphorus acid to 1 mL of prepared sample in sampler cup.
Zn	Aspiration	7950	213.9	352.4 nm alternate.	Background correction required.
				Fe, Co, and Cr.	Background correction required.
				Nonlinear response.	Matrix matching or nitrous-oxide/acetylene flame.
				Volatility.	Sample dilution or use 352.3 nm line.
				Adsorption & scatter.	Spike samples and reference materials and add nickel nitrate to minimize volatilization.
				AgCl insoluble.	Background correction is required and Zeeman background correction can be useful.
				Viscosity.	Background correction is required.
					Avoid hydrochloric acid unless silver is in solution as a chloride complex.
					Sample and standards monitored for aspiration rate.
					Background correction is required. Hydrochloric acid should not be used.
					Background correction is required. Verify that losses are not occurring for volatilization by spiked samples or standard addition; Palladium is a suitable matrix modifier.
					Strontium removes Cu and phosphate.
					Great care taken to avoid contamination.

3.1.5.4.3 Cold Vapor AAS Mercury Analysis. Fraction 1B, Fraction 2B, and Fractions 3A, 3B, and 3C should be analyzed separately for mercury using cold vapor atomic absorption spectroscopy following the method outlined in EPA SW-846 method 7470 or in Standard Methods for Water and Wastewater Analysis, 15th Edition, Method 303F. Set up the calibration curve (zero to 1000 ng) as described in SW-846 method 7470 or similar to method 303F, using 300-ml BOD bottles instead of Erlenmeyers. Dilute separately, as described below, a 1 ml to 10 ml aliquot of each original sample to 100 ml with water. Record the amount of the aliquot used for dilution to 100 ml. If no prior knowledge exists of the expected amount of

mercury in the sample, a 5-ml aliquot is suggested for the first dilution to 100 ml and analysis. To determine the stack emission value for mercury, the amount of the aliquot of the sample used for dilution and analysis is dependent on the amount of mercury in the aliquot. The total amount of mercury in the aliquot used for analysis shall be less than 1 μ g, and within the range (zero to 1000 ng) of the calibration curve. Place each sample aliquot into a separate 300-ml BOD bottle and add enough Type II water to make a total volume of 100 ml. Then analyze the 100 ml for mercury by adding to it sequentially the sample preparation solutions and performing the sample preparation and analysis as described in the procedures of SW-846

method 7470 or method 303F. If, during the described analysis, the reading maximum(s) are off-scale (because the aliquot of the original sample analyzed contained more mercury than the maximum of the calibration range) including the analysis of the 100-ml dilution of the 1-ml aliquot of the original sample causing a reading maximum which is off-scale, then perform the following: Dilute the original sample (or a portion of it) with 0.15% HNO₃ in water (1.5 ml concentrated HNO₃ per liter aqueous solution) so that when a 1-ml to 10-ml aliquot of the dilution of the original sample is then further diluted to 100 ml in the BOD bottle, and analyzed by the procedures described above, it will yield an

analysis within the range of the calibration curve.

3.1.6 Calibration

Maintain a laboratory log of all calibrations.

3.1.6.1 Sampling Train Calibration. Calibrate the sampling train components according to the indicated sections of method 5: Probe Nozzle (section 5.1); Pitot Tube (section 5.2); Metering System (section 5.3); Probe Heater (section 5.4); Temperature Gauges (section 5.5); Leak-Check of the Metering System (section 5.6); and Barometer (section 5.7).

3.1.6.2 Inductively Coupled Argon Plasma Spectrometer Calibration. Prepare standards as outlined in section 3.1.4.4. Profile and calibrate the instrument according to the instrument manufacturer's recommended procedures using the above standards. The instrument calibration should be checked once per hour. If the instrument does not reproduce the concentrations of the standard within 10 percent, the complete calibration procedures should be performed.

3.1.6.3 Atomic Absorption Spectrometer—Direct Aspiration, Graphite Furnace and Cold Vapor Mercury Analyses. Prepare the standards as outlined in section 3.1.4.4. Calibrate the spectrometer using these prepared standards. Calibration procedures are also outlined in the EPA methods referred to in Table 3.1-2 and in SW-846 Method 7470 or Standard Methods for Water and Wastewater, 15th Edition, method 303F (for mercury). Each standard curve should be run in duplicate and the mean values used to calculate the calibration line. The instrument should be recalibrated approximately once every 10 to 12 samples.

3.1.7 Quality Control

3.1.7.1 Sampling, Field Reagent Blanks. When analyzed, the blank samples in Container Numbers 7 through 12 produced previously in sections 3.1.5.2.7 through 3.1.5.2.12, respectively, shall be processed, digested, and analyzed as follows: Digest and process one of the filters from Container No. 12 per section 3.1.5.3.1, 100 ml from Container No. 7 per section 3.1.5.3.2, and 100 ml from Container No. 8A per section 3.1.5.3.3. This produces Fraction Blank 1A and Fraction Blank 1B from Fraction Blank 1. (If desired, the other two filters may be digested separately according to section 3.1.5.3.1, diluted separately to 300 ml each, and analyzed separately to produce a blank value for each of the two additional filters. If these analyses are performed, they will produce two additional values for each of Fraction Blank 1A and Fraction Blank 1B. The three Fraction Blank 1A values will be calculated as three values of M_{mb} in Equation 3 of section 3.1.8.4.3, and then the three values shall be totalled and divided by 3 to become the value M_{mb} to be used in the computation of M_t by Equation 3. Similarly, the three Fraction Blank 1B values will be calculated separately as three values, totalled, averaged, and used as the value for Hg_{mb} in Equation 8 of section 3.1.8.5.3. The analyses of the two extra filters are optional and are not a requirement of this method, but if the analyses are performed, the results must be considered as described above.) Combine 100

ml of Container No. 8A with 200 ml of the contents of Container No. 9 and digest and process the resultant volume per section 3.1.5.3.4. This produces concentrated Fraction Blank 2A and Fraction Blank 2B from Fraction Blank 2. A 100-ml portion of Container No. 8A is Fraction Blank 3A. Combine 100 ml of the contents of Container No. 10 with 33 ml of the contents of Container No. 8B. This produces Fraction Blank 3B (use 400 ml as the volume of Fraction Blank 3B when calculating the blank value. Use the actual volumes when calculating all the other blank values). Dilute 225 ml of the contents of Container No. 11 to 500 ml with water. This produces Fraction Blank 3C. Analyze Fraction Blank 1A and Fraction Blank 2A per section 3.1.5.4.1 and/or 3.1.5.4.2. Analyze Fraction Blank 1B, Fraction Blank 2B, and Fraction Blanks 3A, 3B, and 3C per section 3.1.5.4.3. The analysis of Fraction Blank 1A produces the front-half reagent blank correction values for the metals except mercury; the analysis of Fraction Blank 1B produces the front-half reagent blank correction value for mercury. The analysis of concentrated Fraction Blank 2A produces the back-half reagent blank correction values for the metals except mercury, while separate analysis of Fraction Blanks 2B, 3A, 3B, and 3C produce the back-half reagent blank correction value for mercury.

3.1.7.2 An attempt may be made to determine if the laboratory reagents used in section 3.1.5.3 caused contamination. They should be analyzed by the procedures in section 3.1.5.4. The Administrator will determine whether the laboratory blank reagent values can be used in the calculation of the stationary source test results.

3.1.7.3 Quality Control Samples. The following quality control samples should be analyzed.

3.1.7.3.1 ICAP Analysis. Follow the quality control shown in section 8 of method 6010. For the purposes of a three-run test series, these requirements have been modified to include the following: Two instrument check standard runs, two calibration blank runs, one interference check sample at the beginning of the analysis (must be within 25% or analyze by the method of standard additions), one quality control sample to check the accuracy of the calibration standards (must be within 25% of calibration), and one duplicate analysis (must be within 10% of average or repeat all analyses).

3.1.7.3.2 Direct Aspiration and/or Graphite Furnace AAS Analysis for antimony, arsenic, barium, beryllium, cadmium, copper, chromium, lead, nickel, manganese, mercury, phosphorus, selenium, silver, thallium, and zinc. All samples should be analyzed in duplicate. Perform a matrix spike on at least one front-half sample and one back-half sample or one combined sample. If recoveries of less than 75 percent or greater than 125 percent are obtained for the matrix spike, analyze each sample by the method of standard additions. A quality control sample should be analyzed to check the accuracy of the calibration standards. The results must be within 10% of the calibration repeated.

3.1.7.3.3 Cold Vapor AAS Analysis for Mercury. All samples should be analyzed in

duplicate. A quality control sample should be analyzed to check the accuracy of the calibration standards (within 15% or repeat calibration). Perform a matrix spike on one sample from the nitric impinger portion (must be within 25% or samples must be analyzed by the method of standard additions).

Additional information on quality control can be obtained from EPA SW-846 method 7470 or in Standard Methods for the Examination of Water and Wastewater, 15th Edition, method 303F.

3.1.8 Calculations

3.1.8.1 Dry Gas Volume. Using the data from this test, calculate $V_{m(std)}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

3.1.8.2 Volume of Water Vapor and Moisture Content. Using the data obtained from this test, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_w of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

3.1.8.3 Stack Gas Velocity. Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

3.1.8.4 Metals (Except Mercury) in Source Sample.

3.1.8.4.1 Fraction 1A, Front Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 1 of the sampling train using the following equation:

$$M_{bh} = C_{a1} F_d V_{soln,1} \quad \text{Eq. 1*}$$

where:

M_{bh} = total mass of each metal (except Hg) collected in the front half of the sampling train (Fraction 1), μg .

C_{a1} = concentration of metal in sample Fraction 1A as read from the standard curve ($\mu\text{g}/\text{ml}$).

F_d = dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_{a1}). For example, when 2 ml of Fraction 1A are diluted to 10 ml, $F_d=5$).

$V_{soln,1}$ = total volume of digested sample solution (Fraction 1), ml.

3.1.8.4.2 Fraction 2A, Back Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 2 of the sampling train using the following equation:

$$M_{bh} = C_{a2} F_a V_a \quad \text{Eq. 2*}$$

where:

M_{bh} = total mass of each metal (except Hg) collected in the back half of the sampling train (Fraction 2), μg .

C_{a2} = concentration of metal in sample concentrated Fraction 2A, as read from the standard curve ($\mu\text{g}/\text{ml}$).

F_a = aliquot factor, volume of Fraction 2 divided by volume of aliquot Fraction 2A (see section 3.1.5.3.4).

V_a = total volume of digested sample solution (concentrated Fraction 2A), ml (see section 3.1.5.3.4.1 or 3.1.5.3.4.2, as applicable).

3.1.8.4.3 Total Train, Metals (except Hg). Calculate the total amount of each of the

* If Fractions 1A and 2A are combined, proportional aliquots must be used. Appropriate changes must be made in Equations 1-3 to reflect this approach.

quantified metals collected in the sampling train as follows:

$$M_t = (M_{fb} - M_{fmb}) + (M_{bh} - M_{bbh}) \quad \text{Eq. 3*}$$

where:

M_t =total mass of each metal (separately stated for each metal) collected in the sampling train, μg .

M_{fmb} =blank correction value for mass of metal detected in front-half field reagent blank, μg .

M_{bbh} =blank correction value for mass of metal detected in back-half field reagent blank, μg .

Note: If the measured blank value for the front half (m_{fmb}) is in the range 0.0 to A μg (where A μg equals the value determined by multiplying 1.4 μg per square inch (1.4 $\mu\text{g}/\text{in}^2$) times the actual area in square inches (in^2) of the filter used in the emission sample) m_{fmb} may be used to correct the emission sample value (m_{fb}); if m_{fmb} exceeds A μg , the greater of the two following values (either I. or II.) may be used:

I. A μg , or

II. the lesser of (a) m_{bbh} , or (b) 5 percent of m_{fb} .

If the measured blank value for the back half (m_{bbh}) is in the range of 0.0 to 1 μg , m_{bbh} may be used to correct the emission sample value (m_{bb}); if m_{bbh} exceeds 1 μg , the greater of the two following values may be used: 1 μg or 5 percent of m_{bb} .

3.1.8.5 Mercury in Source Sample.

3.1.8.5.1 Fraction 1B, Front Half, Hg.

Calculate the amount of mercury collected in the front half, Fraction 1, of the sampling train using the following equation:

$$Hg_{fb} = \frac{Q_{fb}}{V_{fb}} \times V_{soln,1} \quad \text{Eq. 4}$$

where:

Hg_{fb} =total mass of mercury collected in the front half of the sampling train (Fraction 1), μg .

Q_{fb} =quantity of mercury in analyzed sample, μg .

$V_{soln,1}$ =total volume of digested sample solution (Fraction 1), ml.

V_{fb} =volume of Fraction 1B analyzed, ml.

See the following notice.

Note: V_{fb} is the actual amount of Fraction 1B analyzed. For example, if 1 ml of Fraction 1B were diluted to 100 ml to bring it into the proper analytical range, and 1 ml of the 100-ml dilution were analyzed, V_{fb} would be 0.01 ml.

3.1.8.5.2 Fraction 2B and Fractions 3A, 3B, and 3C, Back Half, Hg. Calculate the amount of mercury collected in Fractions 2 using Equation 5 and in Fractions 3A, 3B, and 3C using Equation 6. Calculate the total amount of mercury collected in the back half of the sampling train using Equation 7.

$$Hg_{bbh2} = \frac{Q_{bbh2}}{V_{fb}} \times V_{soln,2} \quad \text{Eq. 5}$$

where:

Hg_{bbh2} =total mass of mercury collected in Fraction 2, μg .

Q_{bbh2} =quantity of mercury in analyzed sample, μg .

$V_{soln,2}$ =total volume of Fraction 2, ml.

V_{fb} =volume of Fraction 2B analyzed, ml (see the following note).

Note: V_{fb} is the actual amount of Fraction 2B analyzed. For example, if 1 ml of Fraction 2B were diluted to 10 ml to bring it into the proper analytical range, and 5 ml of the 10-ml dilution was analyzed, V_{fb} would be 0.5.

Use Equation 6 to calculate separately the back-half mercury for Fractions 3A, then 3B, then 3C.

$$Hg_{bbh3(A,B,C)} = \frac{Q_{bbh3(A,B,C)}}{V_{fb(A,B,C)}} \times V_{soln,3(A,B,C)} \quad \text{Eq. 6}$$

where:

$Hg_{bbh3(A,B,C)}$ =total mass of mercury collected separately in Fraction 3A, 3B, or 3C, μg .

$Q_{bbh3(A,B,C)}$ =quantity of mercury in separately analyzed samples, μg .

$V_{fb(A,B,C)}$ =volume of Fraction 3A, 3B, or 3C analyzed, ml (see Note in sections 3.1.8.5.1 and 3.1.8.5.2, and calculate similarly).

$V_{soln,3(A,B,C)}$ =total volume of Fraction 3A, 3B, or 3C, ml.

$$Hg_{bb} = Hg_{fbh2} + Hg_{bbh3A} + Hg_{bbh3B} + Hg_{bbh3C}$$

Eq. 7

where:

Hg_{bb} =total mass of mercury collected in the back half of the sampling train, μg .

3.1.8.5.3 Total Train Mercury Catch.

Calculate the total amount of mercury collected in the sampling train using Equation 8.

$$Hg_t = (Hg_{fb} - Hg_{fmb}) + (Hg_{bb} - Hg_{bbh})$$

Eq. 8

where:

Hg_t =total mass of mercury collected in the sampling train, μg .

Hg_{fmb} =blank correction value for mass of mercury detected in front-half field reagent blank, μg .

Hg_{bbh} =blank correction value for mass of mercury detected in back-half field reagent blanks, μg .

Note: If the total of the measured blank values ($Hg_{fmb} + Hg_{bbh}$) is in the range of 0 to 6 μg , then the total may be used to correct the emission sample value ($Hg_t + Hg_{bb}$); if it exceeds 6 μg , the greater of the following two values may be used: 6 μg or 5 percent of the emission sample value ($Hg_t + Hg_{bb}$).

3.1.8.6 Metal Concentration of Stack Gas. Calculate each metal separately for the cadmium, total chromium, arsenic, nickel, manganese, beryllium, copper, lead, phosphorus, thallium, silver, barium, zinc, selenium, antimony, and mercury concentrations in the stack gas (dry basis, adjusted to standard conditions) as follows:

$$C_s = K_s (M_t / V_{m(std)}) \quad \text{Eq. 9}$$

where:

C_s =concentration of each metal in the stack gas, mg/dscm.

$$K_s = 10^{-3} \text{ mg}/\mu\text{g}$$

M_t =total mass of each metal collected in the sampling train, μg ; (substitute Hg_t for M_t for the mercury calculation).

$V_{m(std)}$ =volume of gas sample as measured by the dry gas meter, corrected to dry standard conditions, dscm.

3.1.8.7 Isokinetic Variation and Acceptable Results. Same as method 5, sections 6.11 and 6.12, respectively.

3.1.9 Bibliography

3.1.9.1 Method 303F in Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980. Available from the American Public Health Association, 1015 18th Street NW., Washington, DC 20036.

3.1.9.2 EPA Methods 6010, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, Third Edition, September 1988. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460.

3.1.9.3 EPA Method 200.7, Code of Federal Regulations, title 40, part 136, appendix C. July 1, 1987.

3.1.9.4 EPA Methods 1 through 5, and 12 Code of Federal Regulations, title 40, part 60, appendix A. July 1, 1987.

3.2 Determination of Hexavalent Chromium Emissions from Stationary Sources (Method Cr⁺⁶)

3.2.1 Applicability and Principle

3.2.1.1 Applicability. This method applies to the determination of hexavalent chromium (Cr⁺⁶) emissions from hazardous waste incinerators, municipal waste combustors, sewage sludge incinerators, and boilers and industrial furnaces. With the approval of the Administrator, this method may also be used to measure total chromium. The sampling train, constructed of Teflon components, has only been evaluated at temperatures less than 300 °F. Trains constructed of other materials, for testing at higher temperatures, are currently being evaluated.

3.2.1.2 Principle. For incinerators and combustors, the Cr⁺⁶ emissions are collected

isokinetically from the source. To eliminate the possibility of Cr⁺⁶ reduction between the nozzle and impinger, the emission samples are collected with a recirculatory train where the impinger reagent is continuously recirculated to the nozzle. Recovery procedures include a post-sampling purge and filtration. The impinger train samples are analyzed for Cr⁺⁶ by an ion chromatograph equipped with a post-column reactor and a visible wavelength detector. The IC/PCR separates the Cr⁺⁶ as chromate (CrO₄²⁻) from other components in the sample matrices that may interfere with the Cr⁺⁶-specific diphenylcarbazide reaction that occurs in the post-column reactor. To increase sensitivity for trace levels of chromium, a preconcentration system is also used in conjunction with the IC/PCR.

3.2.2. Range, Sensitivity, Precision, and Interference

3.2.2.1 Range. Employing a preconcentration procedure, the lower limit of the detection range can be extended to 16 nanograms per dry standard cubic meter (ng/dscm) with a 3 dscm gas sample (0.1 ppb in

solution). With sample dilution, there is no upper limit.

3.2.2.2 Sensitivity. A minimum detection limit of 8 ng/dscm with a 3 dscm gas sample can be achieved by preconcentration (0.05 ppb in solution).

3.2.2.3 Precision. The precision of the IC/PCR with sample preconcentration is 5 to 10 percent. The overall precision for sewage sludge incinerators emitting 120 ng/dscm of Cr⁺⁶ and 3.5 µg/dscm of total chromium is 25% and 9% for Cr⁺⁶ and total chromium, respectively; for hazardous waste incinerators emitting 300 ng/dscm of Cr⁺⁶ it is 20 percent.

3.2.2.4 Interference. Components in the sample matrix may cause Cr⁺⁶ to convert to trivalent chromium (Cr⁺³) or cause Cr⁺³ to convert to Cr⁺⁶. A post-sampling nitrogen purge and sample filtration are included to eliminate many of these interferences. The chromatographic separation of Cr⁺⁶ using ion chromatography reduces the potential for other metals to interfere with the post-column reaction. For the IC/PCR analysis, only compounds that coelute with Cr⁺⁶ and affect the diphenylcarbazide reaction will cause

interference. Periodic analysis of deionized (DI) water blanks is used to demonstrate that the analytical system is essentially free from contamination. Sample cross-contamination that can occur when high-level and low-level samples or standards are analyzed alternately is eliminated by thorough purging of the sample loop. Purging can easily be achieved by increasing the injection volume of the samples to ten times the size of the sample loop.

3.2.3 Apparatus

3.2.3.1 Sampling Train. Schematics of the recirculating sampling trains employed in this method are shown in Figures 3.2-1 and 3.2-2. The recirculatory train is readily assembled from commercially available components. All portions of the train in contact with the sample are either glass, quartz, Tygon, or Teflon, and are to be cleaned as per subsection 3.2.5.1.1.

The metering system is identical to that specified by Method 5 (see section 3.8.1); the sampling train consists of the following components:

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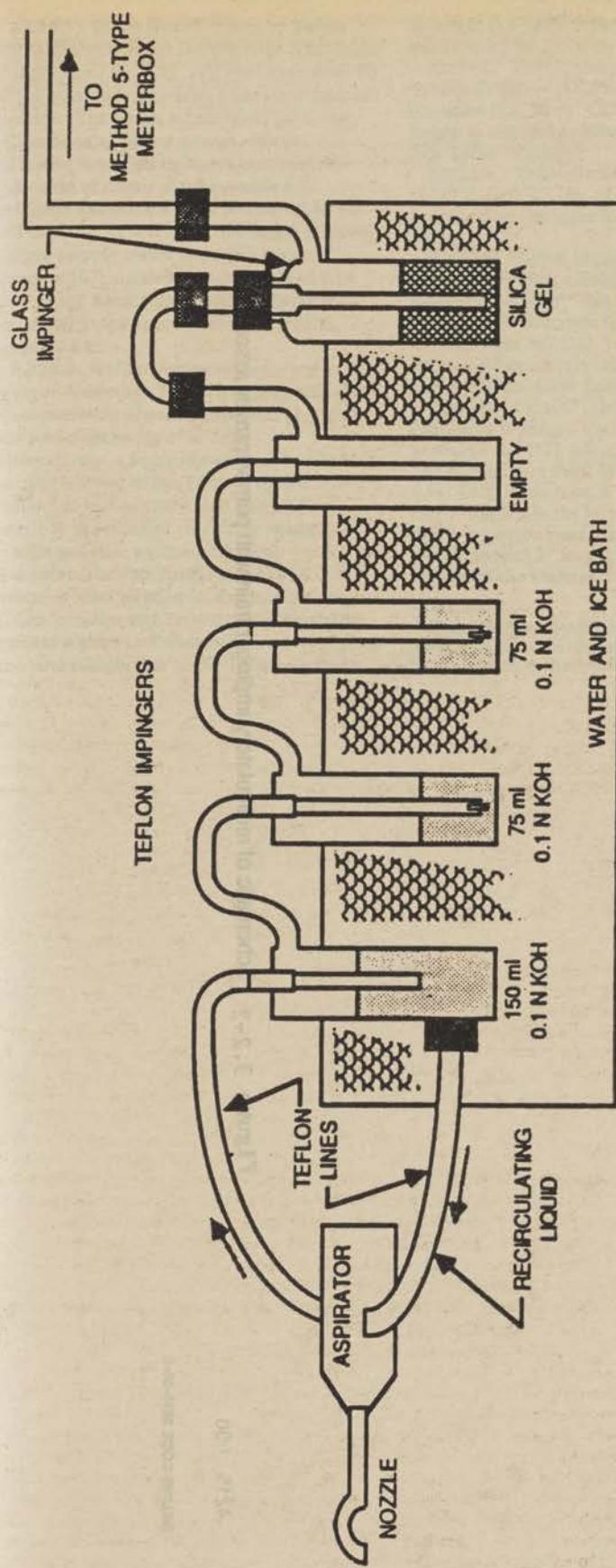


Figure 3.2-1 Schematic of recirculatory impinger train with aspirator assembly.

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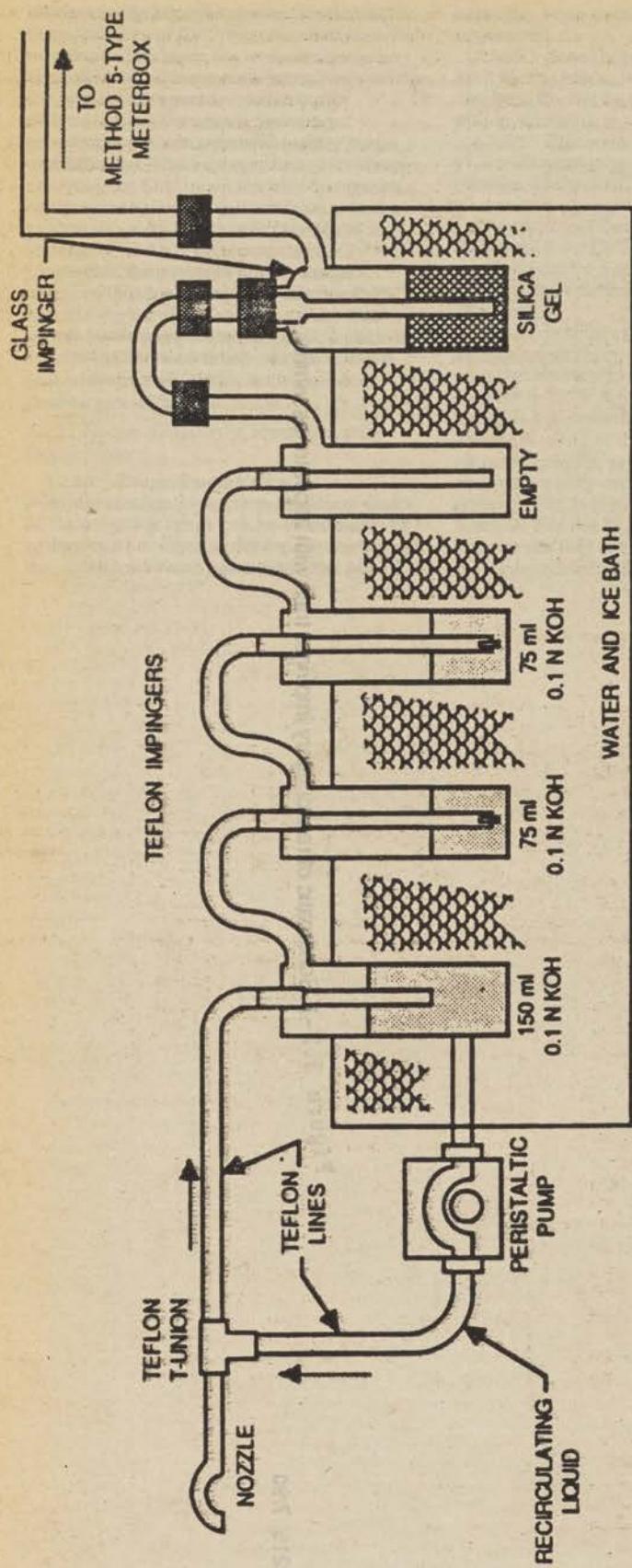


Figure 3.2-2 Schematic of recirculatory impinger train with pump/prayer assembly.

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3.2.3.1.1 Probe Nozzle. Glass or Teflon with a sharp, tapered leading edge. The angle of taper shall be $\leq 30^\circ$ and the taper shall be on the outside to preserve a constant internal diameter. The probe nozzle shall be of the button-hook or elbow design, unless otherwise specified by the Administrator.

A range of nozzle sizes suitable for isokinetic sampling should be available, e.g., 0.32 to 1.27 cm ($\frac{1}{4}$ to $\frac{1}{2}$ in) (or larger if higher volume sample trains are used) inside diameter (ID) nozzles in increments of 0.16 cm ($\frac{1}{16}$ in). Each nozzle shall be calibrated according to the procedures outlined in section 3.2.8.

3.2.3.1.2 Teflon Aspirator or Pump/Sprayer Assembly. Teflon aspirator capable of recirculating absorbing reagent at 50 ml/min while operating at 0.75 cfm. Alternatively, a pump/sprayer assembly may be used instead of the Teflon aspirator. A Teflon union-T is connected behind the nozzle to provide the absorbing reagent/sample gas mix; a peristaltic pump is used to recirculate the absorbing reagent at a flow rate of at least 50 ml/min. Teflon fittings, Teflon ferrules, and Teflon nuts are used to connect a glass or Teflon nozzle, recirculating line, and sample line to the Teflon aspirator

or union-T, Tygon, C-flex** or other suitable inert tubing for use with peristaltic pump.

3.2.3.1.3 Teflon Sample Line. Teflon, $\frac{3}{16}$ " outside diameter (OD) and $\frac{1}{4}$ " inside diameter (ID), or $\frac{1}{2}$ " OD x $\frac{3}{16}$ " ID, of suitable length to connect aspirator (or T-union) to first Teflon impinger.

3.2.3.1.4 Teflon Recirculation Line. Teflon, $\frac{1}{4}$ " O.D. and $\frac{1}{8}$ " I.D., of suitable length to connect first impinger to aspirator (or T-union).

3.2.3.1.5 Teflon Impingers. Four Teflon Impingers; Teflon tubes and fittings, such as made by Savillex** can be used to construct impingers 2" diameter by 12" long, with vacuum-tight $\frac{3}{16}$ " O.D. Teflon compression fittings. Alternatively, standard glass impingers that have been Teflon-lined, with Teflon stems and U-tubes, may be used. Inlet fittings on impinger top to be bored through to accept $\frac{3}{16}$ " O.D. tubing as impinger stem. The second and third $\frac{3}{16}$ " OD Teflon stem has a $\frac{1}{4}$ " OD Teflon tube, 2" long, inserted at its end to duplicate the effects of the Greenburg-Smith impinger stem. The first impinger stem should extend 2" from impinger bottom, high enough in the impinger reagent to prevent air

*Note: Mention of trade names or specific product does not constitute endorsement by the Environmental Protection Agency.

from entering recirculating line; the second and third impinger stems should extend to $\frac{1}{2}$ " from impinger bottom. The first impinger should include a $\frac{1}{4}$ " O.D. Teflon compression fitting for recirculation line. The fourth impinger serves as a knockout impinger.

3.2.3.1.6 Glass Impinger. Silica gel impinger. Vacuum-tight impingers, capable of containing 400 g of silica gel, with compatible fittings. The silica gel impinger will have a modified stem ($\frac{1}{2}$ " ID at tip of stem).

3.2.3.1.7 Thermometer, (identical to that specified by Method 5) at the outlet of the silica gel impinger, to monitor the exit temperature of the gas.

3.2.3.1.8 Metering System, Barometer, and Gas Density Determinations Equipment. Same as method 5, sections 2.1.8 through 2.1.10, respectively.

3.2.3.2 Sample Recovery. Clean all items for sample handling or storage with 10% nitric acid solution by soaking, where possible, and rinse thoroughly with DI water before use.

3.2.3.2.1 Nitrogen Purge Line. Inert tubing and fittings capable of delivering 0 to 1 scf/min (continuously adjustable) of nitrogen gas to the impinger train from a standard gas cylinder (see Figure 3.2.3). Standard $\frac{3}{16}$ -inch Teflon tubing and compression fittings in conjunction with an adjustable pressure regulator and needle valve may be used.

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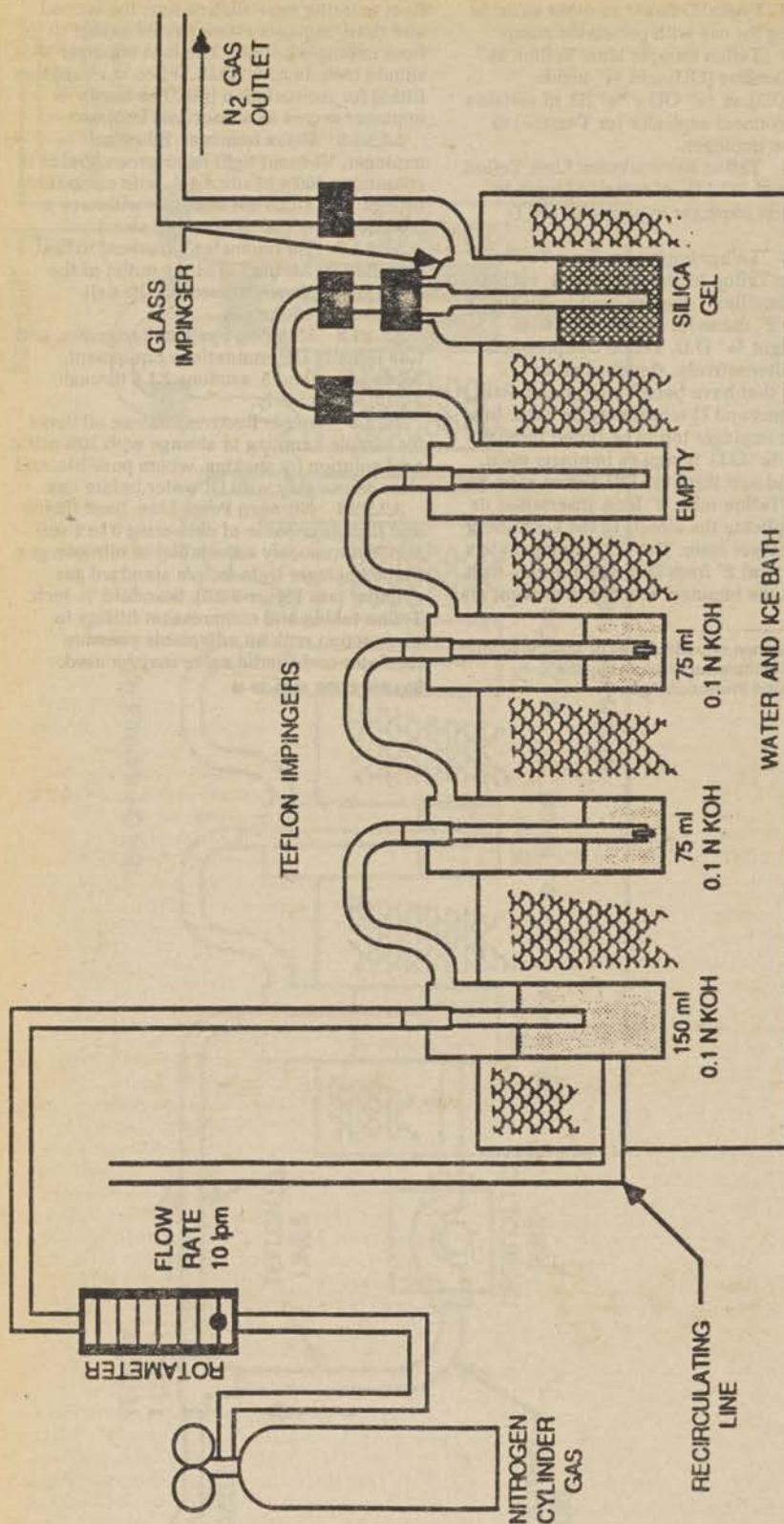


Figure 3.2-3 Schematic of post test nitrogen purge system.

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3.2.3.2.2 Wash bottles. Two polyethylene wash bottles, for DI water and nitric rinse solution.

3.2.3.2.3 Sample Storage Containers. Polyethylene, with leak-free screw cap, 500-ml or 1000-ml.

3.2.3.2.4 1000-ml Graduated Cylinder.

3.2.3.2.5 Plastic Storage Containers. Air tight containers to store silica gel.

3.2.3.2.6 Funnel and Rubber Policeman. To aid in transfer of silica gel from impinger to storage container; not necessary if silica gel is weighed directly in the impinger.

3.2.3.2.7 Balance.

3.2.3.3 Sample Preparation for Analysis. Sample preparation prior to analysis includes purging the sample train immediately following the sample run, and filtering the recovered sample to remove particulate matter immediately following recovery.

3.2.3.3.1 Beakers, Funnels, Volumetric Flasks, Volumetric Pipets, and Graduated Cylinders. Assorted sizes, Teflon or glass, for preparation of samples, sample dilution, and preparation of calibration standards. Prepare initially following procedure described in section 3.2.5.1.3 and rinse between use with 0.1 N HNO₃ and DI water.

3.2.3.3.2 Filtration Apparatus. Teflon, or equivalent, for filtering samples, and Teflon filter holder. Teflon impinger components have been found to be satisfactory as a sample reservoir for pressure filtration using nitrogen.

3.2.3.4 Analysis.

3.2.3.4.1 IC/PCR System. High performance liquid chromatograph pump, sample injection valve, post-column reagent delivery and mixing system, and a visible detector, capable of operating at 520 nm, all with a non-metallic (or inert) flow path. An electronic recording integrator operating in the peak area mode is recommended, but other recording devices and integration techniques are acceptable provided the repeatability criteria and the linearity criteria for the calibration curve described in section 3.2.5.5 can be satisfied. A sample loading system will be required if preconcentration is employed.

3.2.3.4.2 Analytical Column. A high performance ion chromatograph (HPIC) non-metallic column with anion separation characteristics and a high loading capacity designed for separation of metal chelating compounds to prevent metal interference. Resolution described in section 3.2.5.4 must be obtained. A non-metallic guard column with the same ion-exchange material is recommended.

3.2.3.4.3 Preconcentration Column. An HPIC non-metallic column with acceptable anion retention characteristics and sample loading rates as described in section 3.2.5.5.

3.2.3.4.4 0.45 um filter cartridge. For the removal of insoluble material. To be used just prior to sample injection/analysis.

3.2.4 Reagents

All reagents should, at a minimum, conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. All prepared reagents should be checked by IC/PCR analysis for Cr⁺⁶ to ensure that contamination is below the analytical

detection limit for direct injection or, if selected, preconcentration. If total chromium is also to be determined, the reagents should also be checked by the analytical technique selected to ensure that contamination is below the analytical detection limit.

3.2.4.1 Sampling.

3.2.4.1.1 Water. Deionized water. It is recommended that water blanks be checked prior to preparing sampling reagents to ensure that the Cr⁺⁶ content is less than the analytical detection limit.

3.2.4.1.2 Potassium Hydroxide, 0.1 N. Add 5.6 gm of KOH(s) to approximately 900 ml of DI water and let dissolve. Dilute to 1000 ml with DI water.

Note: At sources with high concentrations of acids and/or SO₂, the concentration of KOH should be increased to 0.5 N to ensure that the pH of the solution is above 8.5 after sampling.

3.2.4.1.3 Silica Gel and Crushed Ice. Same as Method 5, sections 3.1.2 and 3.1.4, respectively.

3.2.4.2 Sample Recovery. The reagents used in sample recovery are as follows:

3.2.4.2.1 Water. Same as subsection

3.2.4.1.1.

3.2.4.2.2 Nitric Acid, 0.1 N. Add 6.3 ml of concentrated HNO₃ (70 percent) to a graduated cylinder containing approximately 900 ml of DI water. Dilute to 1000 ml with DI water, and mix well.

3.2.4.2.3 pH Indicator Strip. pH indicator capable of determining pH of solution between the pH range of 7 and 12, at 0.5 pH intervals.

3.2.4.3 Sample Preparation

3.2.4.3.1 Water. Same as subsection

3.2.4.1.1.

3.2.4.3.2 Nitric Acid, 0.1 N. Same as subsection 3.2.4.2.2.

3.2.4.3.3 Filters. Acetate membrane, or equivalent, filters with 0.45 micrometer or smaller pore size to remove insoluble material.

3.2.4.4 Analysis.

3.2.4.4.1 Chromatographic Eluent. The eluent used in the analytical system is ammonium sulfate based. It is prepared by adding 6.5 ml of 29 percent ammonium hydroxide (NH₄OH) and 33 grams of ammonium sulfate ((NH₄)₂SO₄) to 500 ml of DI water. The mixture should then be diluted to 1 liter with DI water and mixed well. Other combinations of eluents and/or columns may be employed provided peak resolution, as described in section 3.2.5.4, repeatability and linearity, as described in section 3.2.6.2, and analytical sensitivity are acceptable.

3.2.4.4.2 Post-Column Reagent. An effective post-column reagent for use with the chromatographic eluent described in section 3.2.4.4.1 is a diphenylcarbazide (DPC) based system. Dissolve 0.5 g of 1,5-diphenylcarbazide (DPC) in 100 ml of ACS grade methanol. Add to 500 ml of degassed DI water containing 50 ml of 96 percent spectrophotometric grade sulfuric acid. Dilute to 1 liter with degassed DI water.

3.2.4.4.3 Cr⁺⁶ Calibration Standard. Prepare Cr⁺⁶ standards from potassium dichromate (K₂Cr₂O₇, FW 294.19). To prepare a 1000 µg/ml Cr⁺⁶ stock solution, dissolve 2.829 g of dry K₂Cr₂O₇ in 1 liter of DI water. To prepare working standards, dilute the

stock solution to the chosen standard concentrations for instrument calibration with 0.05 N KOH to achieve a matrix similar to the actual field samples.

3.2.4.4.4 Performance Audit Sample. A performance audit sample shall be obtained from the Quality Assurance Division of EPA and analyzed with the field samples. The mailing address to request audit samples is: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory, Quality Assurance Division, Source Branch, Mail Drop 77-A, Research Triangle Park, North Carolina 27711.

The audit sample should be prepared in a suitable sample matrix at a concentration similar to the actual field samples.

3.2.5 Procedure

Safety First—Wear Safety Glasses at All Times During This Test Method

3.2.5.1 Sampling. The complexity of this method is such that to obtain reliable results, testers should be trained and experienced with test procedures.

3.2.5.1.1 Pretest Preparation. All components shall be maintained and calibrated according to the procedures described in APTD-0576, unless otherwise specified herein.

Rinse all sample train components from the glass nozzle up to the silica gel impinger and sample containers with hot tap water followed by washing with hot soapy water. Next, rinse the train components and sample containers three times with tap water followed by three rinses with DI water. All the components and containers should then be soaked overnight, or a minimum of 4 hours, in a 10 percent (v/v) nitric acid solution, then rinsed three times with DI water. Allow the components to air dry prior to covering all openings with Parafilm, or equivalent.

3.2.5.1.2 Preliminary Determinations. Same as method 5, section 4.1.2.

3.2.5.1.3 Preparation of Sampling Train. Measure 300 ml of 0.1 N KOH into a graduated cylinder (or tare-weighed precleaned polyethylene container). Place approximately 150 ml of the 0.1 N KOH reagent in the first Teflon impinger. Split the rest of the 0.1 N KOH between the second and third Teflon impingers. The next Teflon impinger is left dry. Place a preweighed 200- to 400-g portion of indicating silica gel in the final glass impinger. (For sampling periods in excess of two hours, or for high moisture sites, 400-g of silica gel is recommended.)

Retain reagent blanks of the 0.1 N KOH equal to the volumes used with the field samples.

3.2.5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, section 4.1.4.1 (Pretest Leak-Check), Section 4.1.4.2 (Leak-Checks During the Sample Run), and Section 4.1.4.3 (Post-Test Leak-Checks).

3.2.5.1.5 Sampling Train Operation. Follow the procedures given in method 5, section 4.1.5. The sampling train should be iced down with water and ice to ensure heat transfer with the Teflon impingers.

Note: If the gas to be sampled is above 200 °F, it may be necessary to wrap three or

four feet of the Teflon sample and recirculating lines inside the ice bath to keep the recirculated reagent cool enough so it does not turn to steam.

For each run, record the data required on a data sheet such as the one shown in Figure 5.2 of method 5.

At the end of the sampling run, determine the pH of the reagent in the first impinger using a pH indicator strip. The pH of the solution shall be greater than 8.5.

3.2.5.1.6 Calculation of Percent Isokinetic. Same as method 5, section 4.1.6.

3.2.5.2 Post-Test Nitrogen Purge. The nitrogen purge is used as a safeguard against the conversion of hexavalent chromium to the trivalent oxidation state. The purge is effective in the removal of SO₂ from the impinger contents.

Attach the nitrogen purge line to the input of the impinger train. Check to ensure the output of the impinger train is open, and that the recirculating line is capped off. Open the nitrogen gas flow slowly and adjust the delivery rate to 10 L/min. Check the recirculating line to ensure that the pressure is not forcing the impinger reagent out through this line. Continue the purge under these conditions for one-half hour, periodically checking the flow rate.

3.2.5.3 Sample Recovery. Begin cleanup procedures as soon as the train assembly has been purged at the end of the sampling run. The probe assembly may be disconnected from the sample train prior to sample purging.

The probe assembly should be allowed to cool prior to sample recovery. Disconnect the umbilical cord from the sample train. When the probe assembly can be safely handled, wipe off all external particulate matter near the tip of the nozzle, and cap the nozzle prior to transporting the sample train to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions.

3.2.5.3.1 Container No. 1 (Impingers 1 through 3). Disconnect the first impinger from the second impinger and disconnect the recirculation line from the aspirator or peristaltic pump. Drain the Teflon impingers into a precleaned graduated cylinder or tare-weighed precleaned polyethylene sample

container and measure the volume of the liquid to within 1 ml or 1 g. Record the volume of liquid present as this information is required to calculate the moisture content of the flue gas sample. If necessary, transfer the sample from the graduated cylinder to a precleaned polyethylene sample container. With DI water, rinse four times the insides of the glass nozzle, the aspirator, the sample and recirculation lines, the impingers, and the connecting tubing, and combine the rinses with the impinger solution in the sample container.

3.2.5.3.2 Container No. 2 (HNO₃ rinse optional for total chromium). With 0.1 N HNO₃, rinse three times the entire train assembly, from the nozzle to the fourth impinger and combine the rinses into a separate precleaned polyethylene sample container for possible total chromium analysis. Repeat the rinse procedure a final time with DI water, and discard the water rinses. Mark the height of the fluid level on the container or, alternatively if a balance is available, weigh the container and record the weight to permit determination of any leakage during transport. Label the container clearly to identify its contents.

3.2.5.3.3 Container No. 3 (Silica Gel). Note the color of the indicating silica gel to determine if it has been completely spent. Quantitatively transfer the silica gel from its impinger to the original container, and seal the container. A funnel and a rubber policeman may be used to aid in the transfer. The small amount of particulate that may adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or the silica gel plus impinger) to the nearest 0.5 g.

3.2.5.3.4 Container No. 4 (0.1 N KOH Blank). Once during each field test, place a volume of reagent equal to the volume placed in the sample train into a precleaned polyethylene sample container, and seal the container. Mark the height of the fluid level on the container or, alternatively if a balance is available, weigh the container and record the weight to permit determination of any leakage during transport. Label the container clearly to identify its contents.

3.2.5.3.5 Container No. 5 (DI Water Blank). Once during each field test, place a

volume of DI water equal to the volume employed to rinse the sample train into a precleaned polyethylene sample container, and seal the container. Mark the height of the fluid level on the container or, alternatively if a balance is available, weigh the container and record the weight to permit determination of any leakage during transport. Label the container clearly to identify its contents.

3.2.5.3.6 Container No. 6 (0.1 N HNO₃ Blank). Once during each field test if total chromium is to be determined, place a volume of 0.1 N HNO₃ reagent equal to the volume employed to rinse the sample train into a pre-cleaned polyethylene sample container, and seal the container. Mark the height of the fluid level on the container or, alternatively if a balance is available, weigh the container and record the weight to permit determination of any leakage during transport. Label the container clearly to identify its contents.

3.2.5.4 Sample Preparation. For determination of Cr⁺⁶, the sample should be filtered *immediately following recovery* to remove any insoluble matter. Nitrogen gas may be used as a pressure assist to the filtration process (see Figure Cr⁺⁶-4).

Filter the entire impinger sample through a 0.45-micrometer acetate filter (or equivalent), and collect the filtrate in a 1000-ml graduated cylinder. Rinse the sample container with DI water three separate times, pass these rinses through the filter, and add the rinses to the sample filtrate. Rinse the Teflon reservoir with DI water three separate times, pass these rinses through the filter, and add the rinses to the sample. Determine the final volume of the filtrate and rinses and return them to the rinsed polyethylene sample container. Label the container clearly to identify its contents. Rinse the Teflon reservoir once with 0.1 N HNO₃ and once with DI water and discard these rinses.

If total chromium is to be determined, quantitatively recover the filter and residue and place them in a vial. (The acetate filter may be digested with 5 ml of 70 percent nitric acid; this digestion solution may then be diluted with DI water for total chromium analysis.)

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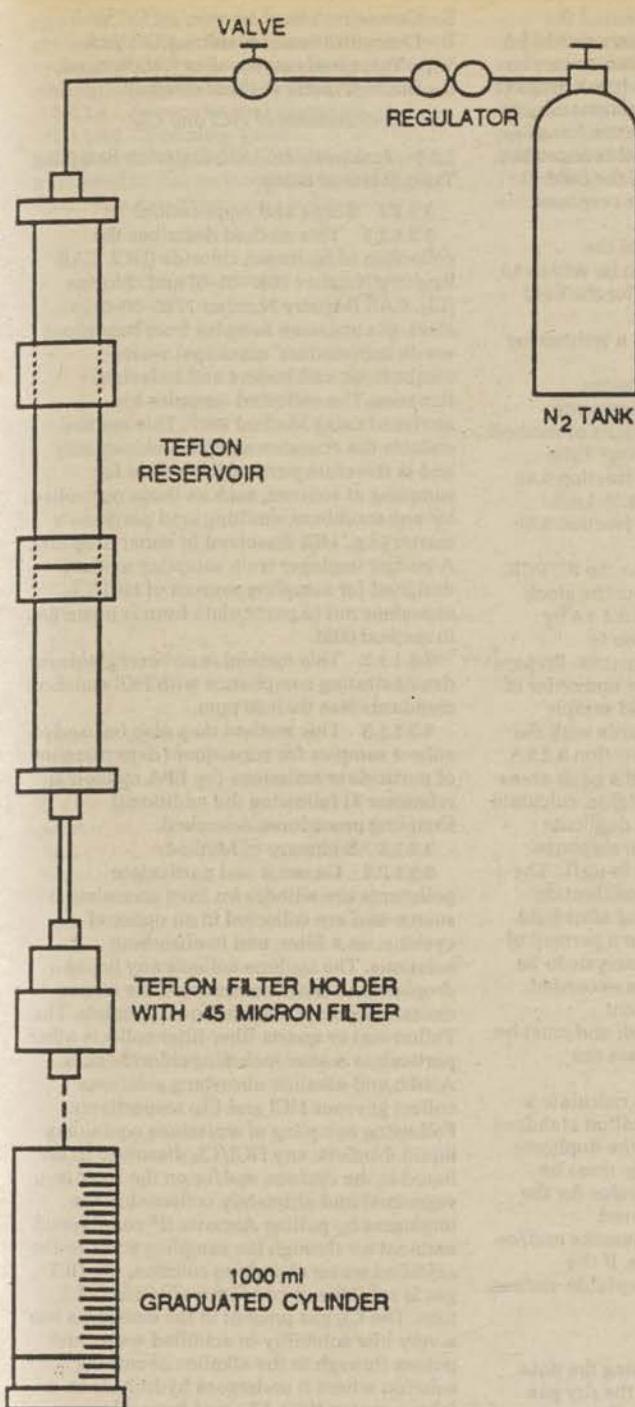


Figure 3.2-4 Schematic of sample filter system.

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Note: If the source has a large amount of particulate in the effluent stream, testing teams may wish to filter the sample twice, once through a 2 to 5-micrometer filter, and then through the 0.45-micrometer filter.

3.2.5.4.1 Container 2 (HNO_3 rinse, optional for total chromium). This sample shall be analyzed in accordance with the selected procedure for total chromium analysis. At a minimum, the sample should be subjected to a digestion procedure sufficient to solubilize all chromium present.

3.2.5.4.2 Container 3 (Silica Gel). Weigh the spent silica gel to the nearest 0.5 g using a balance. (This step may be conducted in the field.)

3.2.5.5 Sample analysis. The Cr^{+6} content of the sample filtrate is determined by ion chromatography coupled with a post-column reactor (IC/PCR). To increase sensitivity for trace levels of chromium, a preconcentration system is also used in conjunction with the IC/PCR.

Prior to preconcentration and/or analysis, all field samples will be filtered through a 0.45- μ filter. This filtration should be conducted just prior to sample injection/analysis.

The preconcentration is accomplished by selectively retaining the analyte on a solid absorbent (as described in 3.2.3.4.3), followed by removal of the analyte from the absorbent. The sample is injected into a sample loop of the desired size (repeated loadings or larger size loop for greater sensitivity) and the Cr^{+6} is collected on the resin bed of the column. When the injection valve is switched, the eluent displaces the concentrated Cr^{+6} sample moving it off the preconcentration column and onto the IC anion separation column. After separation from other sample components, Cr^{+6} forms a specific complex in the post-column reactor with a diphenylcarbazide reaction solution, and the complex is then detected by visible absorbance at a wavelength of 520 nm. The amount of absorbance measured is proportional to the concentration of the Cr^{+6} complex formed. The IC retention time and absorbance of the Cr^{+6} complex is compared with known Cr^{+6} standards analyzed under identical conditions to provide both qualitative and quantitative analyses.

Prior to sample analysis, establish a stable baseline with the detector set at the required attenuation by setting the eluent flowrate at approximately 1 ml/min and post-column reagent flowrate at approximately 0.5 ml/min.

Note: As long as the ratio of eluent flowrate to PCR flowrate remains constant, the standard curve should remain linear. Inject a sample of DI water to ensure that no Cr^{+6} appears in the water blank.

First, inject the calibration standards prepared, as described in section 3.2.4.4.4, to cover the appropriate concentration range, starting with the lowest standard first. Next, inject, in duplicate, the performance audit sample, followed by the 0.1 N KOH field-blank and the field samples. Finally, repeat the injection of the calibration standards to allow for compensation of instrument drift. Measure areas or heights of the $\text{Cr}^{+6}/\text{DPC}$ complex chromatogram peak. The response for replicate, consecutive injections of

samples must be within 5 percent of the average response, or the injection should be repeated until the 5 percent criterion can be met. Use the average response (peak areas or heights) from the duplicate injections of calibration standards to generate a linear calibration curve. From the calibration curve, determine the concentration of the field samples employing the average response from the duplicate injections.

The results for the analysis of the performance audit sample must be within 10 percent of the reference value for the field sample analysis to be valid.

3.2.6 Calibration. Maintain a written log of all calibration activities.

3.2.6.1 Sample Train Calibration. Calibrate the sample train components according to the indicated sections of method 5: Probe Nozzle (section 5.1); Pitot Tube (section 5.2); Metering System (section 5.3); Temperature Gauges (section 5.5); Leak-Check of the Metering System (section 5.6); and Barometer (section 5.7).

3.2.6.2 Calibration Curve for the IC/PCR. Prepare working standards from the stock solution described in section 3.2.4.4.4 by dilution with a DI water solution to approximate the field sample matrix. Prepare at least four standards to cover one order of magnitude that bracket the field sample concentrations. Run the standards with the field samples as described in section 3.2.5.5. For each standard, determine the peak areas (recommended) or the peak heights, calculate the average response from the duplicate injections, and plot the average response against the Cr^{+6} concentration in $\mu\text{g}/\text{L}$. The individual responses for each calibration standard determined before and after field sample analysis must be within 5 percent of the average response for the analysis to be valid. If the 5 percent criteria is exceeded, excessive drift and/or instrument degradation may have occurred, and must be corrected before further analyses are performed.

Employing linear regression, calculate a predicted value for each calibration standard with the average response for the duplicate injections. Each predicted value must be within 7 percent of the actual value for the calibration curve to be considered acceptable. If not acceptable, remake and/or rerun the calibration standards. If the calibration curve is still unacceptable, reduce the range of the curve.

3.2.7 Calculations

3.2.7.1 Dry Gas Volume. Using the data from the test, calculate $V_{m(\text{std})}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

3.2.7.2 Volume of Water Vapor and Moisture Content. Using the data from the test, calculate $V_{w(\text{std})}$ and B_{ws} , the volume of water vapor and the moisture content of the stack gas, respectively, using Equations 5-2 and 5-3 of Method 5.

3.2.7.3 Stack Gas Velocity. Using the data from the test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

3.2.7.4 Total $\mu\text{g } \text{Cr}^{+6}$ /Sample. Calculate as described below:

$$m = (S-B) \times V_{ws} \times d$$

where:

m = Mass of Cr^{+6} in the sample, μg .

S = Concentration of sample, $\mu\text{g } \text{Cr}^{+6}/\text{ml}$.

B = Concentration of blank, $\mu\text{g } \text{Cr}^{+6}/\text{ml}$.

V_{ws} = Volume of sample after filtration, ml.

d = Dilution factor (1 if not diluted).

3.3 Measurement of HCl and Cl_2

3.3.1 Isokinetic HCl/Cl_2 Emission Sampling Train (Method 0050)

3.3.1.1 Scope and Application.

3.3.1.1.1 This method describes the collection of hydrogen chloride (HCl , CAS Registry Number 7647-01-0) and chlorine (Cl_2 , CAS Registry Number 7782-50-5) in stack gas emission samples from hazardous waste incinerators' municipal waste combustors, and boilers and industrial furnaces. The collected samples are analyzed using Method 9057. This method collects the emission sample isokinetically and is therefore particularly suited for sampling at sources, such as those controlled by wet scrubbers, emitting acid particulate matter (e.g., HCl dissolved in water droplets). A midget impinger train sampling method designed for sampling sources of HCl/Cl_2 emissions not in particulate form is presented in method 0051.

3.3.1.1.2 This method is not acceptable for demonstrating compliance with HCl emission standards less than 20 ppm.

3.3.1.1.3 This method may also be used to collect samples for subsequent determination of particulate emissions (by EPA method 5, reference 1) following the additional sampling procedures described.

3.3.1.2 Summary of Method.

3.3.1.2.1 Gaseous and particulate pollutants are withdrawn from an emission source and are collected in an optional cyclone, on a filter, and in absorbing solutions. The cyclone collects any liquid droplets and is not necessary if the source emissions do not contain liquid droplets. The Teflon mat or quartz-fiber filter collects other particulate matter including chloride salts. Acidic and alkaline absorbing solutions collect gaseous HCl and Cl_2 , respectively. Following sampling of emissions containing liquid droplets, any HCl/Cl_2 dissolved in the liquid in the cyclone and/or on the filter is vaporized and ultimately collected in the impingers by pulling Ascarite II^R conditioned ambient air through the sampling train. In the acidified water absorbing solution, the HCl gas is solubilized and forms chloride (Cl^-) ions. The Cl_2 gas present in the emissions has a very low solubility in acidified water and passes through to the alkaline absorbing solution where it undergoes hydrolysis to form a proton (H^+), Cl^- , and hypochlorous acid (HClO). The Cl^- ions in the separate solutions are measured by ion chromatography (method 9057). If desired, the particulate matter recovered from the filter and the probe is analyzed following the procedures in EPA Method 5 (reference 1).

3.3.1.3 Interferences.

3.3.1.3.1 Volatile materials which produce chloride ions upon dissolution during sampling are obvious interferences in the measurement of HCl . One interferant for HCl is diatomic chlorine (Cl_2) gas which disproportionate to HCl and hypochlorous acid (HClO) upon dissolution in water. Cl_2 gas exhibits a low solubility in water.

however, and the use of acidic rather than neutral or basic solutions for collection of hydrogen chloride gas greatly reduces the dissolution of any chlorine present.

3.3.1.4 Apparatus and Materials.

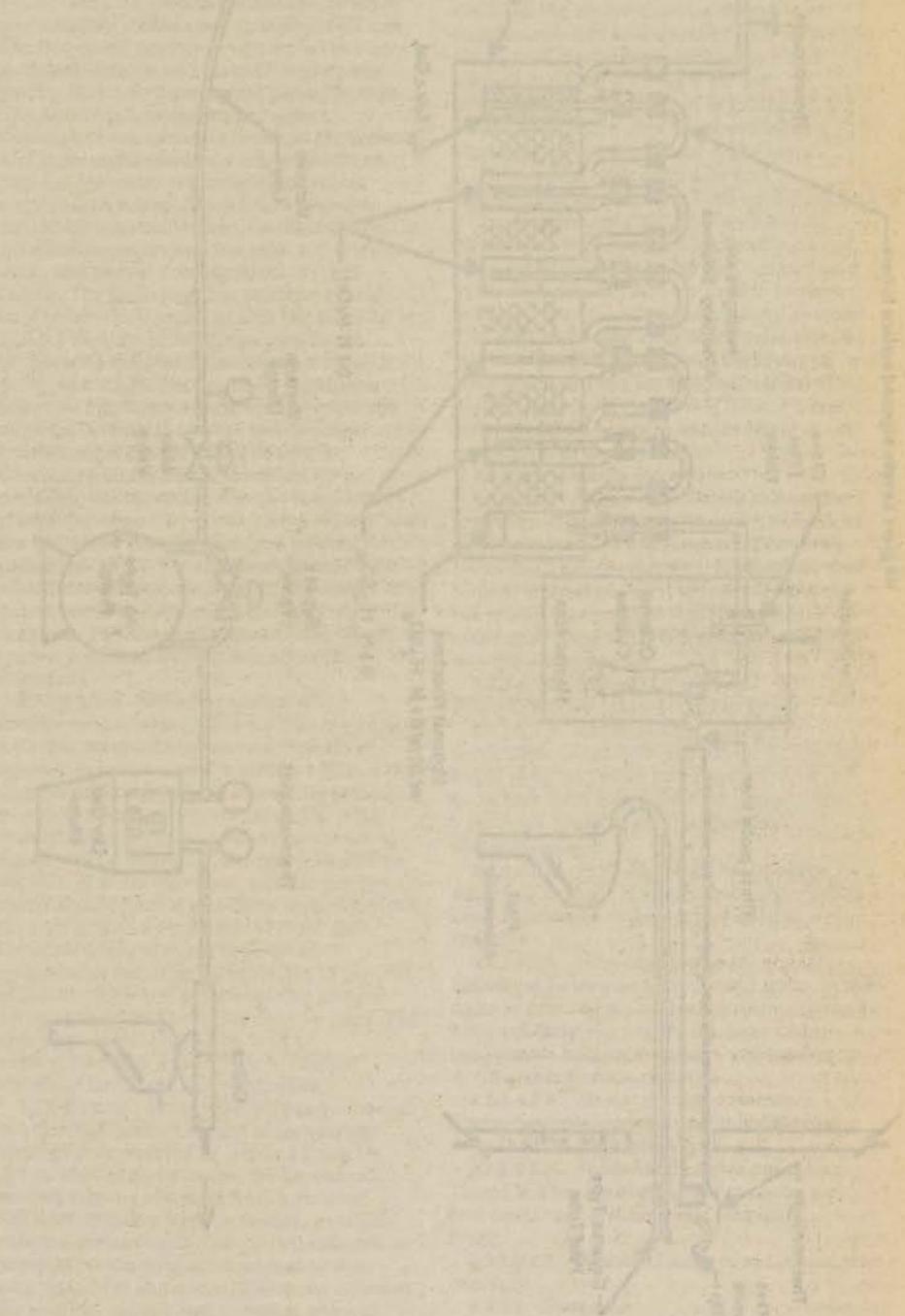
3.3.1.4.1 Sampling Train.

3.3.1.4.1.1 A schematic of the sampling train used in this method is shown in Figure 3.3-1. This sampling train configuration is

adapted from EPA method 5 procedures, and, as such, the majority of the required equipment is identical to that used in EPA Method 5 determinations. The new components required are a glass nozzle and probe, a Teflon union, a quartz-fiber or Teflon mat filter (see section 3.3.1.5.5), a Teflon frit, and acidic and alkaline absorbing solutions.

3.3.1.4.1.2 Construction details for the basic train components are provided in section 3.4 of EPA's Quality Assurance Handbook, Volume III (reference 2); commercial models of this equipment are also available.

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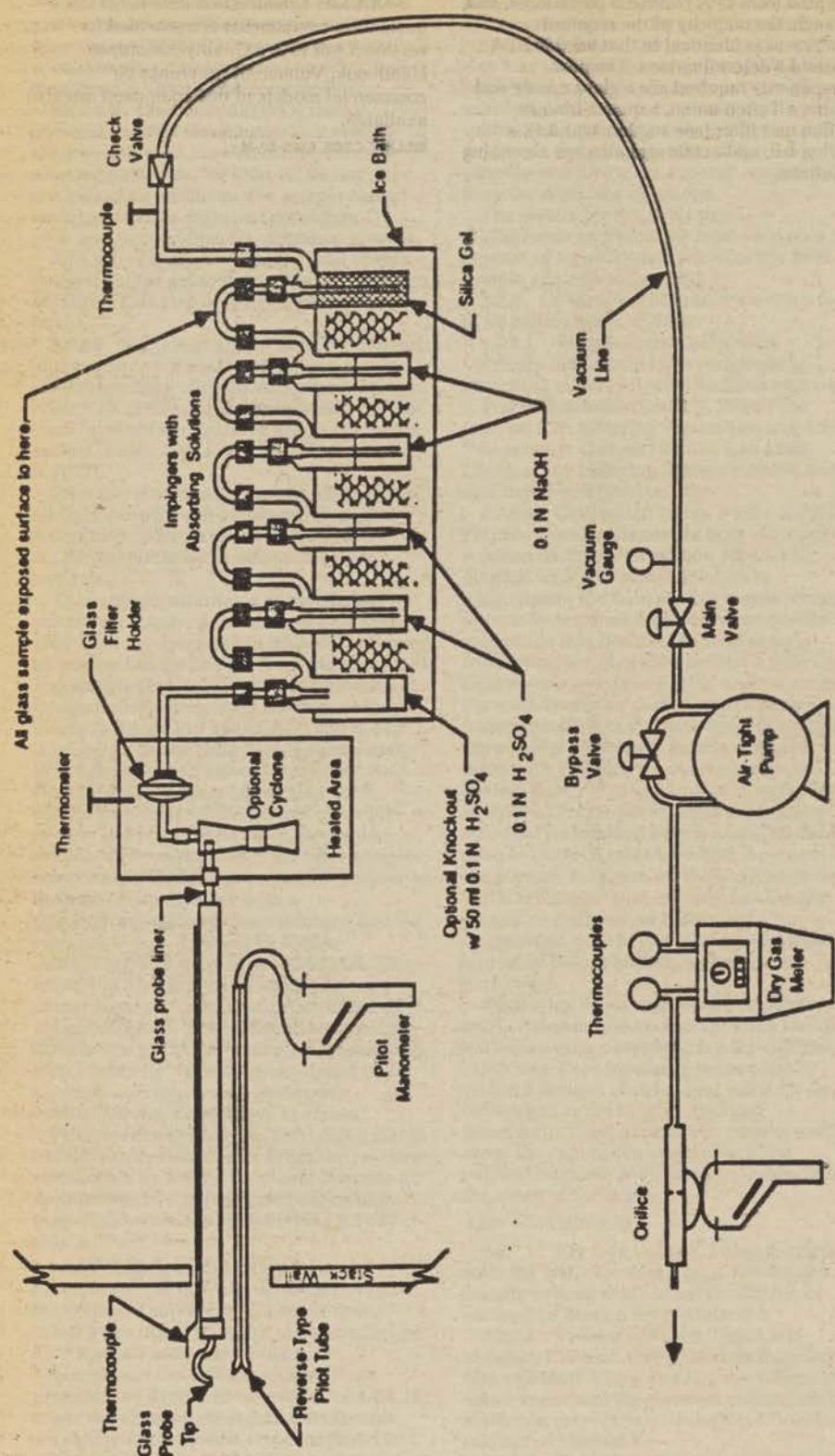


Figure 3.3-1 Isokinetic HCl/C12 Sampling Train

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Additionally, the following subsections identify allowable train configuration modifications.

3.3.1.4.1.3 Basic operating and maintenance procedures for the sampling train are also described in Reference 2. As correct usage is important in obtaining valid results, all users should refer to Reference 2 and adopt the operating and maintenance procedures outlined therein unless otherwise specified. The sampling train consists of the components detailed below.

3.3.1.4.1.3.1 Probe nozzle. Glass with sharp, tapered (30° angle) leading edge. The taper shall be on the outside to preserve a constant I.D. The nozzle shall be buttonhook or elbow design. The nozzle should be coupled to the probe liner using a Teflon union. It is recommended that a stainless steel nut be used on this union. In cases where the stack temperature exceeds 210 °C (410 °F), a one-piece glass nozzle/liner assembly must be used. A range of nozzle sizes suitable for isokinetic sampling should be available. Each nozzle shall be calibrated according to the procedures outlined in EPA Method 5 (see References 1 and 2).

3.3.1.4.1.3.2 Probe liner. Borosilicate or quartz-glass tubing with a heated system capable of maintaining a gas temperature of 120 ± 14 °C (248 ± 25 °F) at the exit end during sampling. Because the actual temperature at the outlet of the probe is not usually monitored during sampling, probes constructed and calibrated according to the procedure in Reference 2 are considered acceptable. Either borosilicate or quartz-glass probe liners may be used for stack temperatures up to about 480 °C (900 °F). Quartz liners shall be used for temperatures between 480 and 900 °C (900 and 1650 °F). (The softening temperature for borosilicate is 820 °C (1508 °F), and for quartz is 1500 °C (2732 °F).) Water-cooling of the stainless steel sheath will be necessary at temperatures approaching and exceeding 500 °C.

3.3.1.4.1.3.3 Pitot tube. Type S, as described in section 2.1 of EPA Method 2 (Reference 1). The pitot tube shall be attached to the probe to allow constant monitoring of the stack-gas velocity. The impact (high-pressure) opening plane of the pitot tube shall be even with or above the nozzle entry plane (see section 3.1.1 of Reference 2) during sampling. The Type S pitot tube assembly shall have a known coefficient, determined as outlined in section 3.1 of Reference 2.

3.3.1.4.1.3.4 Differential pressure gauge. Inclined manometer or equivalent device as described in section 2.2 of EPA method 2 (Reference 1). One manometer shall be used for velocity-head (ΔP) readings and the other for orifice differential pressure (ΔH) readings.

3.3.1.4.1.3.5 Cyclone (optional). Glass.

3.3.1.4.1.3.6 Filter holder. Borosilicate glass, with a Teflon frit filter support and a sealing gasket. The sealing gasket shall be constructed of Teflon or equivalent materials. The holder design shall provide a positive seal against leakage at any point along the filter circumference. The holder shall be attached immediately to the outlet of the cyclone.

3.3.1.4.1.3.7 Filter heating system. Any heating system capable of maintaining a

temperature of 120 ± 14 °C (248 ± 25 °F) around the filter and cyclone during sampling. A temperature gauge capable of measuring temperature to within 3 °C (5.4 °F) shall be installed so that the temperature around the filter holder can be regulated and monitored during sampling.

3.3.1.4.1.3.8 Impinger train. The following system shall be used to determine the stack gas moisture content and to collect HCl and Cl₂: five or six impingers connected in series with leak-free ground glass fittings or any similar leak-free non-contaminating fittings. The first impinger shown in Figure 1 (knockout or condensate impinger) is optional and is recommended as a water knockout trap for use under test conditions which require such a trap. If used, this impinger should be constructed as described below for the alkaline impingers, but with a shortened stem, and should contain 50 ml of 0.1 N H₂SO₄. The following two impingers (acid impingers which each contain 100 ml of 0.1 N H₂SO₄) shall be of the Greenburg-Smith design with the standard tip (see method 5, paragraph 2.1.7). The next two impingers (alkaline impingers which each contain 100 ml of 0.1 N NaOH) and the last impinger (containing silica gel) shall be of the Greenburg-Smith design modified by replacing the tip with a 1.3-cm (1/2-in) I.D. glass tube extending about 1.3 cm (1/2 in) from the bottom of the impinger (see method 5, paragraph 2.1.7). The condensate, acid, and alkaline impingers shall contain known quantities of the appropriate absorbing reagents. The last impinger shall contain a known weight of silica gel or equivalent desiccant.

3.3.1.4.1.3.9 Metering system. The necessary components are a vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 3 °C (5.4 °F), dry-gas meter capable of measuring volume to within 1 percent, an orifice meter, (rate meter), and related equipment, as shown in Figure 1. At a minimum, the pump should be capable of 4 cfm free flow, and the dry-gas meter should have a recording capacity of 0-999.9 cu ft with a resolution of 0.005 cu ft. Other metering systems capable of maintaining sampling rates within 10 percent of isokineticity and of determining sample volumes to within 2 percent may be used. The metering system should be used in conjunction with a pitot tube to enable checks of isokinetic sampling rates.

3.3.1.4.1.3.10 Barometer. Mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg). In many cases, the barometric reading may be obtained from a nearby National Weather Service station, in which case the station value (which is the absolute barometric pressure) is requested and an adjustment for elevation differences between the weather station and sampling point is applied at a rate of minus 2.5 mm Hg (0.1 in. Hg) per 300-m (100 ft) elevation increase (vice versa for elevation decrease).

3.3.1.4.1.3.11 Gas density determination equipment. Temperature sensor and pressure gauge (as described in sections 2.3 and 2.4 of EPA method 2), and gas analyzer, if necessary (as described in EPA method 3, Reference 1). The temperature sensor ideally

should be permanently attached to the pitot tube or sampling probe in a fixed configuration such that the tip of the sensor extends beyond the leading edge of the probe sheath and does not touch any metal.

Alternatively, the sensor may be attached just prior to use in the field. Note, however, that if the temperature sensor is attached in the field, the sensor must be placed in an interference-free arrangement with respect to the Type S pitot tube openings (see EPA method 2, Figure 2-7). As a second alternative, if the stack gas is saturated, the stack temperature may be measured at a single point near the center of the stack.

3.3.1.4.1.3.12 Ascarite tube for conditioning ambient air. Tube tightly packed with approximately 150 g of fresh 8 to 20 mesh Ascarite II® sodium hydroxide coated silica, or equivalent, to dry and remove acid gases from the ambient air used to remove moisture from the filter and optional cyclone. The inlet and outlet ends of the tube should be packed with at least 1 cm thickness of glass wood or filter material suitable to prevent escape of Ascarite II fines. Fit one end with flexible tubing, etc. to allow connection to probe nozzle.

3.3.1.4.2 Sample Recovery.

3.3.1.4.2.1 Probe liner; probe and nozzle brushes; nylon bristle brushes with stainless steel wire handles are required. The probe brush shall have extensions of stainless steel, Teflon, or inert material at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner and the probe nozzle.

3.3.1.4.2.2 Wash bottles. Two. Polyethylene or glass, 500 ml or larger.

3.3.1.4.2.3 Glass sample storage containers. Glass, 500- or 1000-ml. Screw-cap liners shall be Teflon and constructed so as to be leak-free. Narrow-mouth glass bottles have been found to exhibit less tendency toward leakage.

3.3.1.4.2.4 Petri dishes. Glass or plastic, sealed around the circumference with Teflon tape, for storage and transport of filter samples.

3.3.1.4.2.5 Graduated cylinder and/or balances. To measure condensed water to the nearest 1 ml or 1 g. Graduated cylinders shall have subdivisions not >2 ml. Laboratory triple-beam balances capable of weighing to ± 0.5 g or better are required.

3.3.1.4.2.6 Plastic storage containers. Screw-cap polypropylene or polyethylene containers to store silica gel.

3.3.1.4.2.7 Funnel and rubber policeman. To aid in transfer of silica gel to container (not necessary if silica gel is weighed in field).

3.3.1.4.2.8 Funnels. Glass, to aid in sample recovery.

3.3.1.5 Reagents

3.3.1.5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently higher purity to

permit its use without lessening the accuracy of the determination.

3.3.1.5.2 ASTM Type II water (ASTM D1193-77 (1983)). All references to water in the method refer to ASTM Type II unless otherwise specified. It is advisable to analyze a blank sample of this reagent *prior to* sampling, since the reagent blank values obtained during the field sample analysis must be less than 10 percent of the sample values (see method 9057).

3.3.1.5.3 Sulfuric acid (0.1 N), H_2SO_4 . Used as the HCl absorbing reagent in the impinger train. To prepare 1 L, slowly add 2.80 ml of concentrated H_2SO_4 to about 900 ml of water while stirring, and adjust the final volume to 1 L using additional water. Shake well to mix the solution. It is advisable to analyze a blank sample of this reagent *prior to* sampling, since the reagent blank values obtained during the field sample analysis must be less than 10 percent of the sample values (see method 9057).

3.3.1.5.4 Sodium hydroxide (0.1 N), NaOH. Used as the Cl_2 absorbing reagent in the impinger train. To prepare 1 L, dissolve 4.00 g of solid NaOH in about 900 ml of water and adjust the final volume of 1 L using additional water. Shake well to mix the solution. It is advisable to analyze a blank sample of this reagent *prior to* sampling, since the reagent blank values obtained during the field sample analysis must be less than 10 percent of the sample values (see Method 9057).

3.3.1.5.5 Filter. Quartz-fiber or Teflon mat (e.g., Pallflex® TX40HI45) filter.

3.3.1.5.6 Silica gel. Indicating type, 6–16 mesh. If previously used, dry at 175 °C (350°F) for 2 hours before using. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used, subject to the approval of the Administrator.

3.3.1.5.7 Acetone. When using this train for determination of particulate emissions, reagent grade acetone, <0.001 percent residue, in glass bottles is required. Acetone from metal containers generally has a high residue blank and should not be used. Sometimes suppliers transfer acetone to glass bottles from metal containers; thus, acetone blanks shall be run prior to field use and only acetone with low blank values (<0.001 percent) shall be used. In no case shall a blank value greater than 0.001 percent of the weight of acetone used be subtracted from the sample weight.

3.3.1.5.8 Crushed ice. Quantities ranging from 10–50 lbs may be necessary during a sampling run, depending on ambient air temperature.

3.3.1.5.9 Stopcock grease. Acetone-insoluble, heat-stable silicone grease may be used, if needed. Silicone grease usage is not necessary if screw-on connectors or Teflon sleeves on ground-glass joints are used.

3.3.1.6 Sample Collection, Preservation, and Handling.

3.3.1.6.1 Sample collection is described in this method. The analytical procedures for HCl and Cl_2 are described in method 9057 and for particulate matter in EPA method 5 (Reference 1).

3.3.1.6.2 Samples should be stored in clearly labeled, tightly sealed containers between sample recovery and analysis. They

may be analyzed up to four weeks after collection.

3.3.1.7 Procedure.

3.3.1.7.1 Preparation for Field Test.
3.3.1.7.1.1 All sampling equipment shall be maintained and calibrated according to the procedures described in section 3.4.2 of EPA's Quality Assurance Handbook, Volume III (Reference 2).

3.3.1.7.1.2 Weigh several 200- to 300-g portions of silica gel in airtight containers to the nearest 0.5 g. Record on each container the total weight of the silica gel plus containers. As an alternative to preweighing the silica gel, it may instead be weighed directly in the impinger just prior to train assembly.

3.3.1.7.1.3 Check filters visually against light for irregularities and flaws or pinhole leaks. Label the shipping containers (glass or plastic Petri dishes) and keep the filters in these containers at all times except during sampling (and weighing for particulate analysis).

3.3.1.7.1.4 If a particulate determination will be conducted, desiccate the filters at $20 \pm 5.6^\circ\text{C}$ ($68 \pm 10^\circ\text{F}$) and ambient pressure for at least 24 hours, and weigh at intervals of at least 6 hours to a constant weight (i.e., <0.5 mg change from previous weighing), recording results to the nearest 0.1 mg. During each weighing, the filter must not be exposed for more than a 2-min period to the laboratory atmosphere and relative humidity above 50 percent. Alternatively (unless otherwise specified by the Administrator), the filters may be oven-dried at 105°C (220°F) for 2–3 hours, desiccated for 2 hours, and weighed.

3.3.1.7.2 Preliminary Field Determinations.
3.3.1.7.2.1 Select the sampling site and the minimum number of sampling points according to EPA method 1 or as specified by the Administrator. Determine the stack pressure, temperature, and range of velocity heads using EPA method 2. It is recommended that a leak-check of the pitot lines (see EPA method 2, section 3.1) be performed. Determine the stack-gas moisture content using EPA method 4 or its alternatives to establish estimates of isokinetic sampling rate settings. Determine the stack gas dry molecular weight, as described in EPA method 2, section 3.6. If integrated EPA method 3 (Reference 1) sampling is used for molecular weight determination, the integrated bag sample shall be taken simultaneously with, and for the same total length of time as the sample run.

3.3.1.7.2.2 Select a nozzle size based on the range of velocity heads so that it is not necessary to change the nozzle size to maintain isokinetic sampling rates. During the run, do not change the nozzle. Ensure that the proper differential pressure gauge is chosen for the range of velocity heads encountered (see section 2.2 of EPA method 2).

3.3.1.7.2.3 Select a suitable probe liner and probe length so that all traverse points can be sampled. For large stacks, to reduce the length of the probe, consider sampling from opposite sides of the stack.

3.3.1.7.2.4 The total sampling time should be two hours. Allocate the same time to all

traverse points defined by EPA method 1. To avoid timekeeping errors, the length of time sampled at each traverse point should be an integer or an integer plus one-half min. Size the condensate impinger for the expected moisture catch or be prepared to empty it during the run.

3.3.1.7.3 Preparation of Sampling Train.

3.3.1.7.3.1 Add 50 ml of 0.1 N H_2SO_4 to the condensate impinger, if used. Place 100 ml of 0.1 N H_2SO_4 in each of the next two impingers. Place 100 ml of 0.1 N NaOH in each of the following two impingers. Finally, transfer approximately 200–300 g of preweighed silica gel from its container to the last impinger. More silica gel may be used, but care should be taken to ensure that it is not entrained and carried out from the impinger during sampling. Place the silica gel container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

3.3.1.7.3.2 Using a tweezer or clean disposable surgical gloves, place a labeled (identified) filter (weighed, if particulate matter to be determined) in the filter holder. Be sure that the filter is properly centered and the gasket properly placed to prevent the sample gas stream from circumventing the filter. Check the filter for tears after assembly is completed.

3.3.1.7.3.3 To use glass liners, install the selected nozzle using a Viton-A O-ring when stack temperatures are <260°C (500°F) and a woven glass-fiber gasket when temperatures are higher. Other connecting systems utilizing either 316 stainless steel or Teflon ferrules may be used. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

3.3.1.7.3.4 Set up the train as in Figure 3.3-1. A minimal amount of silicone grease may be used on ground glass joints. Connect temperature sensors to the appropriate potentiometer/display unit. Check all temperature sensors at ambient temperature.

3.3.1.7.3.5 Place crushed ice around the impingers.

3.3.1.7.3.6 Turn on and set the filter and probe heating systems at the desired operating temperatures. Allow time for the temperatures to stabilize.

3.3.1.7.4 Leak-Check Procedures.

3.3.1.7.4.1 Pretest leak-check. A pretest leak-check is recommended, but not required. If the tester opts to conduct the pretest leak-check, the following procedure shall be used.

3.3.1.7.4.1.1 If a Viton-A O-ring or other leak-free connection is used in assembling the probe nozzle to the probe liner, leak-check the train at the sampling site by plugging the nozzle and pulling a 380-mm Hg (15-in. Hg) vacuum.

Note: A lower vacuum may be used, provided that it is not exceeded during the test.

3.3.1.7.4.1.2 If a woven glass-fiber gasket is used, do not connect the probe to the train during the leak-check. Instead, leak-check the train by first plugging the inlet to the cyclone, if used, or the filter holder and pulling a 380-mm Hg (15-in. Hg) vacuum (see Note above). Then, connect the probe to the train and leak-

check at about 25-mm Hg (1-in. Hg) vacuum; alternatively, leak-check the probe with the rest of the sampling train in one step at 380-mm Hg (15-in. Hg) vacuum. Leakage rates in excess of 4 percent of the average sampling rate or $0.00057 \text{ m}^3/\text{min}$ (0.02 cfm), whichever is less, are unacceptable.

3.3.1.7.4.1.3 The following leak-check instructions for the sampling train may be helpful. Start the pump with bypass valve fully open and coarse adjust valve completely closed. Partially open the coarse adjust valve and slowly close the bypass valve until the desired vacuum is reached. Do *not* reverse direction of the bypass valve; this will cause water to back up into the filter holder. If the desired volume is exceeded, either leak-check at this higher vacuum or end the leak-check, as shown below, and start over.

3.3.1.7.4.1.4 When the leak-check is completed, first slowly remove the plug from the inlet to the probe, cyclone, or filter holder and immediately turn off the vacuum pump. This prevents the liquid in the impingers from being forced backward into the filter holder and silica gel from being entrained backward into the fifth impinger.

3.3.1.7.4.2 Leak-checks during sample run. If during the sampling run, a component (e.g., filter assembly or impinger) change becomes necessary or a port change is conducted, a leak-check shall be conducted immediately after the interruption of sampling and before the change is made. The leak-check shall be conducted according to the procedure outlined in Section 3.3.1.7.4.1, except that it shall be conducted at a vacuum greater than or equal to the maximum value recorded up to that point in the test. If the leakage rate is found to be no greater than $0.00057 \text{ m}^3/\text{min}$ (0.02 cfm) or 4 percent of the average

sampling rate (whichever is less), the results are acceptable. If a higher leakage rate is obtained, the tester shall void the sampling run. Immediately after a component change or port change, and before sampling is reinitiated, another leak-check similar to a pre-test leak-check is recommended.

3.3.1.7.4.3 Post-test leak-check. A leak-check is mandatory at the conclusion of each sampling run. The leak-check shall be done using the same procedures as those with the pre-test leak-check, except that it shall be conducted at a vacuum greater than or equal to the maximum value reached during the sampling run. If the leakage rate is found to be no greater than $0.00057 \text{ m}^3/\text{min}$ (0.02 cfm) or 4 percent of the average sampling rate (whichever is less), the results are acceptable. If a higher leakage rate is obtained, the tester shall void the sampling run.

3.3.1.7.5 Train Operation.

3.3.1.7.5.1 During the sampling run, maintain an isokinetic sampling rate to within 10 percent of true isokinetic, unless otherwise specified by the Administrator. Maintain a temperature around the filter (and cyclone, if used) of $120 \pm 14^\circ\text{C}$ ($248 \pm 25^\circ\text{F}$).

3.3.1.7.5.2 For each run, record the data required on a data sheet such as the one shown in Figure 3.3-2. Be sure to record the initial dry gas meter reading. Record the dry gas meter readings at the beginning and end of each sampling time increment, when changes in flow rates are made before and after each leak-check, and when sampling is halted. Take other readings required by Figure 3.3-2 at least once at each sample point during each time increment and additional readings when significant changes (20 percent variation in velocity head

.readings) necessitate additional adjustments in flow rate. Level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse.

3.3.1.7.5.3 Clean the stack access ports prior to the test run to eliminate the chance of sampling deposited material. To begin sampling, remove the nozzle cap, verify that the filter and probe heating systems are at the specified temperature, and verify that the pitot tube and probe are positioned properly. Position the nozzle at the first traverse point, with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions using a calculator or a nomograph. Nomographs are designed for use when the Type S pitot tube coefficient is 0.84 ± 0.02 and the stack gas equivalent density (dry molecular weight) is equal to 29 ± 4 . If the stack gas molecular weight and the pitot tube coefficient are outside the above ranges, do not use the nomographs unless appropriate steps are taken to compensate for the deviations (see Reference 3).

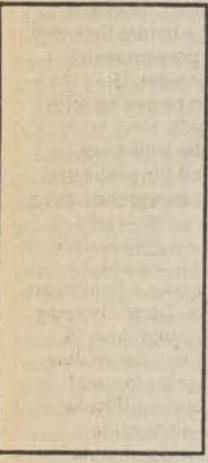
3.3.1.7.5.4 When the stack is under significant negative pressure (equivalent to the height of the impinger stem), take care to close the coarse adjust valve before inserting the probe into the stack, to prevent water from backing into the filter holder. If necessary, the pump may be turned on with the coarse adjust valve closed.

3.3.1.7.5.5 When the probe is in position, block off the openings around the probe and stack access port to prevent unrepresentative dilution of the gas stream.

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Plant _____
 Location _____
 Operator _____
 Date _____
 Run No. _____
 Sample Box No. _____
 Meter Box No. _____
 Meter Hg _____
 C Factor _____
 Pitot Tube Coefficient C_p _____

Schematic of Stack Cross Section



Nozzle Identification No. _____
 Average Calibrated Nozzle Diameter, cm (in) _____
 Probe Heater Setting _____
 Leak Rate, m³/min. (cfm) _____
 Probe Liner Material _____
 Static Pressure, mm Hg (in Hg) _____
 Filter No. _____

Traverse Point Number	Sampling Line (S) min	Vacuum mm Hg (in. Hg)	Stack Temperature (T _s) °C(f)	Velocity Head (P _s) mm (ft) H ₂ O	Pressure Differential Across Orifice Meter mm (ft) H ₂ O (in H ₂ O)	Gas Sample Volume m ³ (ft ³)	Gas Sample Temp at Dry Gas Meter Inlet °C(°F)		Temperature of Gas Leaving Condenser or Last Impinger	
							Filter Holder Temperature °C(°F)	Gas Sample Temp at Dry Gas Meter Outlet °C(°F)	Filter Holder Temperature °C(°F)	Gas Sample Temp at Dry Gas Meter Outlet °C(°F)
Total							Avg.	Avg.	Avg.	Avg.
Average										

Figure 3.3-2 Field Data Form

3.3.1.7.5.6 Traverse the stack cross section, as required by EPA Method 1 or as specified by the Administrator, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or when removing or inserting the probe through the access port, in order to minimize the chance of extracting deposited material.

3.3.1.7.5.7 During the test run, make periodic adjustments to keep the temperature around the filter holder (and cyclone, if used) at the proper level. Add more ice, and, if necessary, salt to maintain a temperature of $<20^{\circ}\text{C}$ (68°F) at the condenser/silica gel outlet. Also, periodically check the level and zero of the manometer.

3.3.1.7.5.8 If the pressure drop across the filter becomes too high, making isokinetic sampling difficult to maintain, it may be replaced in the midst of a sample run. Using another complete filter holder assembly is recommended, rather than attempting to change the filter itself. After a new filter assembly is installed, conduct a leak-check. If determined, the total particulate weight shall include the summation of all filter assembly catches.

3.3.1.7.5.9 If the condensate impinger becomes too full, it may be emptied, recharged with 50 ml of 0.1 N H_2SO_4 , and replaced during the sample run. The condensate emptied must be saved and included in the measurement of the volume of moisture collected and included in the sample for analysis. The additional 50 ml of absorbing reagent must also be considered in calculating the moisture. After the impinger is reinstalled in the train, conduct a leak check.

3.3.1.7.5.10 A single train shall be used for the entire sample run, except in cases where simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct, or in cases where equipment failure necessitates a change of trains. In all other situations, the use of two or more trains will be subject to the approval of the Administrator.

3.3.1.7.5.11 Note that when two or more trains are used, separate analyses of the particulate catch (if applicable) and the HCl and Cl_2 impinger catches from each train shall be performed, unless identical nozzle sizes were used on all trains. In that case, the particulate catch and the HCl and Cl_2 impinger catches from the individual trains may be combined, and a single particulate analysis and single HCl and Cl_2 analyses of the impinger contents may be performed.

3.3.1.7.5.12 At the end of the sample run, turn off the coarse adjust valve, remove the probe and nozzle from the stack, turn off the pump, and record the final dry gas meter reading.

3.3.1.7.5.13 If there is any possibility that liquid has collected in the glass cyclone and/or on the filter, connect the Ascarite tube at the probe inlet and operate the train with the filter heating system at $120 \pm 14^{\circ}\text{C}$ ($248 \pm 25^{\circ}\text{F}$) at a low flow rate (e.g., $H=1$) sufficient to vaporize the liquid and any HCl in the cyclone or on the filter and pull it through the train into the impingers. After 30 minutes, turn off the flow, remove the Ascarite tube, and examine the cyclone and filter for any visible moisture. If moisture is visible, repeat this step for 15 minutes.

3.3.1.7.5.14 Conduct a post-test leak check. Also, leak-check the pivot lines as described in EPA method 2. The lines must pass this leak-check in order to validate the velocity-head data.

3.3.1.7.5.15 If the moisture value is available, calculate percent isokineticity (see section 3.3.1.7.7.10) to determine whether the run was valid or another test run should be conducted.

3.3.1.7.6 Sample Recovery.

3.3.1.7.6.1 Allow the probe to cool. When the probe can be handled safely, wipe off all the external surfaces of the tip of the probe nozzle and place a cap over the tip. Do not cap the probe tip tightly while the sampling train is cooling down because this will create a vacuum in the filter holder, drawing water from the impingers into the holder.

3.3.1.7.6.2 Before moving the sampling train to the cleanup site, remove the probe, wipe off any silicone grease, and cap the open outlet, being careful not to lose any condensate that might be present. Wipe off any silicone grease and cap the filter or cyclone inlet. Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used between the first impinger and the filter holder, disconnect it at the filter holder and let any condensed water drain into the first impinger. Wipe off any silicone grease and cap the filter holder outlet and the impinger inlet. Ground glass stoppers, plastic caps, serum caps, Teflon tape, Parafilm®, or aluminum foil may be used to close these openings.

3.3.1.7.6.3 Transfer the probe and filter/impinger assembly to the cleanup area. This area should be clean and protected from the weather to minimize sample contamination or loss.

3.3.1.7.6.4 Save portions of all washing solutions used for cleanup (acetone and Type II water) and the absorbing reagents (0.1 N H_2SO_4 and 0.1 N NaOH) as blanks. Transfer 200 ml of each solution directly from the wash bottle being used (rinse solutions) or the supply container (absorbing reagents) and place each in a separate, prelabeled glass sample container.

3.3.1.7.6.5 Inspect the train prior to and during disassembly and note any abnormal conditions.

3.3.1.7.6.6 Container No. 1 (filter catch for particulate determination). Carefully remove the filter from the filter holder and place it in its identified Petri dish container. Use one or more pair of tweezers to handle the filter. If it is necessary to fold the filter, ensure that the particulate cake is inside the fold. Carefully transfer to the Petri dish any particulate matter or filter fibers that adhere to the filter holder gasket, using a dry nylon bristle brush or sharp-edged blade, or both. Label the container and seal with Teflon tape around the circumference of the lid.

3.3.1.7.6.7 Container No. 2 (front-half rinse for particulate determination). Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter or any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with acetone into a glass container. Retain an acetone blank and analyze with the samples.

3.3.1.7.6.8 Perform rinses as follows: Carefully remove the probe nozzle and clean the inside surface by rinsing with acetone from a wash bottle and brushing with a nylon bristle brush. Brush until the rinse shows no visible particles; then make a final rinse of the inside surface with the acetone. Brush and rinse the inside parts of the Swagelok fitting with the acetone in a similar way until no visible particles remain.

3.3.1.7.6.9 Have two people rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with solvent. Let the acetone drain from the lower end into the sample container. A glass funnel may be used to aid in transferring liquid washed to the container.

3.3.1.7.6.10 Follow the acetone rinse with a probe brush. Hold the probe in an inclined position and squirt acetone into the upper end while pushing the probe brush through the probe with a twisting action; place a sample container underneath the lower end of the probe and catch any acetone and particulate matter that is brushed from the probe. Run the brush through the probe three or more times until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. Rinse the brush with acetone and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above. Between sampling runs, keep brushes clean and protected from contamination.

3.3.1.7.6.11 Clean the inside of the front half of the filter holder and cyclone by rubbing the surfaces with a nylon bristle brush and rinsing with acetone. Rinse each surface three times, or more if needed, to remove visible particulate. Make a final rinse of the brush and filter holder. Carefully rinse out the glass cyclone and cyclone flask (if applicable). Brush and rinse any particulate material adhering to the inner surfaces of these components into the front-half rinse sample. After all rinses and particulate matter have been collected in the sample container, tighten the lid on the sample container so that acetone will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to identify its contents.

3.3.1.7.6.12 Container No. 3 (knockout and acid impinger catch for moisture and HCl determination). Disconnect the impingers. Measure the liquid in the acid and knockout impingers to within ± 1 ml by using a graduated cylinder or by weighing it to within ± 0.5 g by using a balance (if one is available). Record the volume or weight of liquid present. This information is required to calculate the moisture content of the effluent gas. Quantitatively transfer this liquid to a leak-free sample storage container. Rinse these impingers, connecting glassware (and tubing, if used); and the back half of the filter holder with water and add these rinses to the storage container. Seal the container, shake to mix, and label. The fluid level should be marked so that if any sample is lost during transport, a correction proportional to the lost volume can be applied. Retain rinse water

and acidic absorbing solution blanks and analyze with the samples.

3.3.1.7.8.13 Container No. 4 (alkaline impinger catch for Cl₂ and moisture determination). Measure and record the liquid in the alkaline impingers as described in section 3.3.1.7.8.12. Quantitatively transfer this liquid to a leak-free sample storage container. Rinse these two impingers and connecting glassware with water and add these rinses to the container. Seal the container, shake to mix, and label; mark the fluid level. Retain alkaline absorbing solution blank and analyze with the samples.

3.3.1.7.8.14 Container No. 5 (silica gel for moisture determination). Note the color of the indicating silica gel to determine if it has been completely spent and make a notation of its condition. Transfer the silica gel from the last impinger to its original container and seal. A funnel may make it easier to pour the silica gel without spilling. A rubber policeman may be used as an aid in removing the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere strongly to the impinger wall. Because the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, weigh the container and its contents to 0.5 g or better.

3.3.1.7.8.15 Prior to shipment, recheck all sample containers to ensure that the caps are well secured. Seal the lids of all containers around the circumference with Teflon tape. Ship all liquid samples upright and all particulate filters with the particulate catch facing upward.

3.3.1.7.7 Calculations. Retain at least one extra decimal figure beyond those contained in the available data in intermediate calculations, and round off only the final answer appropriately.

3.3.1.7.7.1 Nomenclature.

A_n=Cross-sectional area of nozzle, m²(ft²).
B_{ws}=Water vapor in the gas stream, proportion by volume.

C_a=Acetone blank residue concentration, mg/mg.
C_d=Type S pitot tube coefficient (nominally 0.84±0.02), dimensionless.

C_s=Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, g/dscm (g/dscf).

I=Percent of isokinetic sampling.

m_a=Mass of residue of acetone after evaporation, mg.

M_n=Total amount of particulate matter collected, mg.

M_d=Stack-gas dry molecular weight, g/g-mole (lb/lb-mole).

M_w=Molecular weight of water, 18.0 g/g-mole (18.0 lb/lb-mole).

P_{bar}=Barometric pressure at the sampling site, mm Hg (in. Hg).

P_s=Absolute stack-gas pressure, ms Hg (in. Hg).

P_{std}=Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

R=Ideal gas constant, 0.08236 mm Hg·m³(K-g-mole (21.85 in. Hg·ft³/°R-lb-mole).

T_m=Absolute average dry-gas meter temperature (see Figure 2), °K (°R).

T_s=Absolute average stack-gas temperature (see Figure 2), °K (°R).

T_{std}=Standard absolute temperature, 293 °K (528 °R).

V_{lc}=Total volume of liquid collected in the impingers and silica gel, ml.

V_m=Volume of gas sample is measured by dry-gas meter, dscm (dscf).

V_{m(std)}=Volume of gas sample measured by the dry-gas meter, corrected to standard conditions, dscm (dscf).

V_{w(std)}=Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).

V_s=Stack-gas velocity, calculated by Method 2, Equation 2-9, using data obtained from Method 5, m/sec (ft/sec).

W_a=Weight of residue in acetone wash, mg.

V_{aw}=Volume of acetone used in wash, ml.

Y=Dry-gas-meter calibration factor, dimensionless.

ΔH=Average pressure differential across the orifice meter, mm H₂O (in H₂O).

ρ_a=Density of acetone, mg/μl [see label on bottle].

ρ_w=Density of water, 0.9982 g/ml (0.002201 lb/ml).

θ=Total sampling time, min.

13.8=Specific gravity of mercury.

80=Sec/min.

100=Conversion to percent.

3.3.1.7.7.2 Average dry gas meter temperature and average orifice pressure drop. See data sheet (Figure 3-3-2).

3.3.1.7.7.3 Dry gas volume. Correct the sample measured by the dry gas meter to standard conditions (20 °C, 760 mm Hg [68 °F, 29.92 in. Hg]) by using Equation 1:

$$V_{m(std)} = V_m Y \frac{T_{std} P_{bar} + \Delta H / 13.6}{T_m P_{std}}$$

$$= K_1 V_m Y \frac{P_{bar} - \Delta H / 13.6}{T_m} \quad (1)$$

where:

K₁=0.3858 K/mm Hg for metric units, or
K₁=17.64 °R/in. Hg for English units.

3.3.1.7.7.4 Volume of water vapor.

$$V_{w(std)} = V_{lc} \frac{P_w RT_{std}}{M_w P_{std}} = K_2 V_{lc} \quad (2)$$

where:

K₂=0.001333 m³/ml for metric units, or
K₂=0.04707 m³/ml for English units.

3.3.1.7.7.5 Moisture content.

$$B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}} \quad (3)$$

Note: In saturated or water-droplet-laden gas streams, two calculations of the moisture content of the stack gas shall be made, one from the impinger analysis (Equation 3) and a second from the assumption of saturated conditions. The lower of the two values of B_{ws} shall be considered correct. The procedure

for determining the moisture content based upon assumption of saturated conditions is given in the Note to section 1.2 of Method 4. For the purposes of this method, the average stack gas temperature from Figure 2 may be used to make this determination, provided that the accuracy of the in-stack temperature sensor is ±1 °C (2 °F).

3.3.1.7.7.6 Acetone blank concentration. For particulate determination.

$$C_a = \frac{m_a}{V_s P_a} \quad (4)$$

3.3.1.7.7.7 Acetone wash blank. For particulate determination.

$$W_a = C_a V_{aw} \Delta_s \quad (5)$$

3.3.1.7.7.8 Total particulate weight. Determine the total particulate catch from the sum of the weights obtained from Container Nos. 1 and 2 less the acetone blank (W_a).

3.3.1.7.7.9 Particulate concentration.

$$c_s = (0.001 g/mg)(m_n/V_{m(std)}) \quad (6)$$

3.3.1.7.7.10 Isokinetic variation.

3.3.1.7.7.10.1 Calculation from raw data.

$$I = \frac{\frac{100 T_s [K_s F_{lc} + (V_{m(std}) / T_m)(P_{bar} + H / 13.6)]}{60 \theta V_s P_a A_n}}{A_n} \quad (7)$$

where:

K_s=0.003454 mm Hg·m³/ml·K for metric units, or

K_s=0.002669 in. Hg·ft³/ml °R for English units.

3.3.1.7.7.10.2 Calculation for intermediate values.

$$I = \frac{T_s V_{m(std)} P_{std} 100}{T_{std} V_s \theta A_n P_a 60(1 - B_{ws})} \quad (8)$$

$$= K_4 \frac{T_s V_{m(std)}}{P_s V_s A_n \theta (1 - B_{ws})} \quad (8)$$

where:

K₄=4.320 for metric units, or
K₄=0.09450 for English units.

3.3.1.7.7.10.3 Acceptable units. If 90 percent < I < 110 percent, the results are acceptable. If the results are low in comparison with the standard and I is beyond the acceptable range, or if I is less than 90 percent, the Administrator may opt to accept the results.

3.3.1.8 Quality Control.

3.3.1.8.1 Sampling. See EPA Manual 600/4-77-027b for Method 5 quality control.

3.3.1.8.2 Analysis. At the present time, a validated audit material does not exist for this method. Analytical quality control procedures are detailed in Method 9057.

3.3.1.9 Method Performance.

3.3.1.9.1 The in-stack detection limit for the method is approximately 0.02 μg of HCl per liter of stack gas. The method has a negative bias below 20 ppm HCl (Reference 6).

3.3.1.9.2 It is preferable to include the cyclone in the sampling train to protect the filter from any moisture present. There is research in progress regarding the necessity of the cyclone at low moisture sources and the use of Ascarite II in the drying procedure (Section 3.3.1.7.5.12).

References

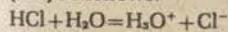
- U.S. Environmental Protection Agency, 40 CFR part 60, appendix A, Methods 1-5.
- U.S. Environmental Protection Agency, "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods," Publication No. EPA-600/4-77-027b, August 1977.
- Shigenara, R.T., Adjustments in the EPA Nomography for Different Pitot Tube Coefficients and Dry Molecular Weights, Stack Sampling News, 24-11 (October 1974).
- Steinsberger, S.C. and J.H. Margeson, "Laboratory and Field Evaluation of a Methodology for Determination of Hydrogen Chloride Emissions from Municipal and Hazardous Waste Incinerators," U.S. Environmental Protection Agency, Office of Research and Development, Report No. EPA 600/3-89/064, NTIS PB89 220586-AS.
- State of California, Air Resources Board, method 421, "Determination of Hydrochloric Acid emissions from Stationary Sources," March 18, 1987.
- Entropy Environmentalists, Inc., "Laboratory Evaluation of a Sampling and Analysis Method for Hydrogen Chloride Emissions from Stationary Sources: Interim Report," EPA Contract No. 68-02-4442, Research Triangle Park, North Carolina, January 22, 1988.
- 3.3.2 Midget Impinger HCl/Cl₂ Emission Sampling Train (Method 0051)**

3.3.2.1 Scope and Application.

3.3.2.1.1 This method describes the collection of hydrogen chloride (HCl, CAS Registry Number 7647-01-0) and chlorine (Cl₂, CAS Registry Number 7782-50-5) in stack gas emission samples from hazardous waste incinerators, municipal waste combustors, and boilers and industrial furnaces. The collected samples are analyzed using method 9057. This method is designed to collect HCl/Cl₂ in their gaseous forms. Sources, such as those controlled by wet scrubbers, that emit acid particulate matter (e.g., HCl dissolved in water droplets) must be sampled using an isokinetic HCl/Cl₂ sampling train (see Method 0050).

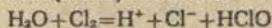
3.3.2.2 Summary of Method.

3.3.2.2.1 An integrated gas sample is extracted from the stack and passes through a particulate filter, acidified water, and finally through an alkaline solution. The filter serves to remove particulate matter such as chloride salts which could potentially react and form analyte in the absorbing solutions. In the acidified water absorbing solution, the HCl gas is solubilized and forms chloride ions (Cl⁻) as follows:



The Cl₂ gas present in the emissions has a very low solubility in acidified water and passes through to the alkaline absorbing solution where it undergoes hydrolysis to

form a proton (H⁺), Cl⁻, and hypochlorous acid (HClO) as follows:

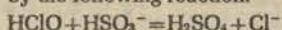


The Cl⁻ ions in the separate solutions are measured by ion chromatography (Method 9057).

3.3.2.3 Interferences.

3.3.2.3.1 Volatile materials which produce chloride ions upon dissolution during sampling are obvious interferences in the measurement of HCl. One interferant for HCl is diatomic chlorine (Cl₂) gas which disproportionate to HCl and hypochlorous acid (HClO) upon dissolution in water. Cl₂ gas exhibits a low solubility in water, however, and the use of acidic rather than neutral or basic solutions for collection of hydrogen chloride gas greatly reduces the dissolution of any chlorine present. Sampling a 400 ppm HCl gas stream containing 50 ppm Cl₂ with this method does not cause a significant bias. Sampling a 220 ppm HCl gas stream containing 180 ppm Cl₂ results in a positive bias of 3.4 percent in the HCl measurement.

3.3.2.3.2 Reducing agents such as SO₂ may cause a positive bias in the Cl₂ measurement by the following reaction:



3.3.2.4 Apparatus and Materials.

3.3.2.4.1 Sampling Train. The sampling train is shown in Figure 1 and component parts are discussed below.

3.3.2.4.1.1 Probe. Borosilicate glass, approximately $\frac{1}{8}$ -in (9-mm) inside diameter, with a heating system to prevent condensation. When the concentration of alkaline particulate matter in the emissions is high, a $\frac{1}{8}$ -in (9-mm) inside diameter Teflon elbow should be attached to the inlet of the probe; a 1-in (25-mm) length of Teflon tubing with a $\frac{1}{8}$ -in (9-mm) inside diameter should be attached at the open end of the elbow to permit the opening of the probe to be burned away from the gas stream, thus reducing the amount of particulate entering the train. When high concentrations of particulate matter are not present, the Teflon elbow is not necessary, and the probe inlet can be perpendicular to the gas stream. When sampling at locations where gas temperatures are greater than approximately 400 °F, such as wet scrubber inlets, glass or quartz elbows must be used. In no case should a glass wool plug be used to remove particulate matter; use of such a filtering device could result in a bias in the data.⁽¹⁾ Instead, a Teflon filter should be used as specified in section 3.3.2.5.5.

3.3.2.4.1.2 Three-way stopcock. A borosilicate, three-way glass stopcock with a heating system to prevent condensation. The heated stopcock should connect directly to the outlet of the probe and filter assembly and the inlet of the first impinger. The heating system should be capable of preventing condensation up to the inlet of the first impinger. Silicone grease may be used, if necessary, to prevent leakage.

3.3.2.4.1.3 Impingers. Five 30-ml midget impingers with leak-free glass connectors. Silicone grease may be used, if necessary, to prevent leakage. For sampling at high moisture sources or for extended sampling times greater than one hour, a midget

impinger with a shortened stem (such that the gas sample does not bubble through the collected condensate) should be used in front of the first impinger.

3.3.2.4.1.4 Mae West impinger or drying tube. Mae West design impinger (or drying tube, if a moisture determination is not to be conducted) filled with silica gel, or equivalent, to dry the gas sample and to protect the dry gas meter and pump.

3.3.2.4.1.5 Sample Line. Leak-free, with compatible fittings to connect the last impinger to the needle valve.

3.3.2.4.1.6 Barometer. Mercury, aneroid, or other barometer capable of measuring atmospheric pressure within 2.5 mm Hg (0.1 in. Hg). In many cases, the barometric reading may be obtained from a nearby National Weather Service station, in which case the station value (which is the absolute barometric pressure) shall be requested and an adjustment for the elevation differences between the weather station and sampling point shall be applied at a rate of minus 2.5 mm Hg (0.1 in. Hg) per 30 m (100 ft) elevation increase or vice versa for elevation decrease.

3.3.2.4.1.7 Purge pump, purge line, drying tube, needle valve, and rate meter. Pump capable of purging sample probe at 2 liters/min, with drying tube, filled with silica gel or equivalent, to protect pump, and a rate meter, 0 to 5 liters/min.

3.3.2.4.1.8 Metering system. The following items comprise the metering system which is identical to that used for EPA Method 6 (see Reference 5).

3.3.2.4.1.8.1 Valve. Needle valve, to regulate sample gas flow rate.

3.3.2.4.1.8.2 Pump. Leak-free diaphragm pump, or equivalent, to pull gas through train. Install a small surge tank between the pump and the rate meter to eliminate the pulsation effect of the diaphragm pump on the rotameter.

3.3.2.4.1.8.3 Rate meter. Rotameter, or equivalent, capable of measuring flow rate to within 2 percent of selected flow rate of 2 liters/min.

3.3.2.4.1.8.4 Volume meter. Dry gas meter, sufficiently accurate to measure the sample volume within 2 percent, calibrated at the selected flow rate and conditions encountered during sampling, and equipped with a temperature gauge (dial thermometer or equivalent) capable of measuring temperature to within 3 °C (5.4 °F).

3.3.2.4.1.8.5 Vacuum gauge. At least 760 mm Hg (30 in. Hg) gauge to be used for leak check of the sampling train.

3.3.2.4.2 Sample Recovery.

3.3.2.4.2.1 Wash bottles. Polyethylene or glass, 500 ml or larger, two.

3.3.2.4.2.2 Storage bottles. Glass, with Teflon-lined lids, 100 ml, to store impinger samples (two per sampling run).

3.3.2.5 Reagents.

3.3.2.5.1 Reagent grade chemicals. shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit

its use without lessening the accuracy of the determination.

3.3.2.5.2 ASTM Type II Water (ASTM D1193-77 (1983)). All references to water in the method refer to ASTM Type II unless otherwise specified. It is advisable to analyze a blank sample of this reagent *prior* to sampling, since the reagent blank value obtained during the field sample analysis must be less than 10 percent of the sample values (see method 9057).

3.3.2.5.3 Sulfuric acid (0.1 N), H_2SO_4 . Used as the HCl absorbing reagent. To prepare 100 ml, slowly add 0.28 ml of concentrated H_2SO_4 to about 90 ml of water while stirring, and adjust the final volume to 100 ml using additional water. Shake well to mix the solution. It is advisable to analyze a blank sample of this reagent *prior* to sampling, since the reagent blank value obtained during the field sample analysis must be less than 10 percent of the sample values (see method 9057).

3.3.2.5.4 Sodium hydroxide (0.1 N), $NaOH$. Used as the Cl_2 absorbing reagent. To prepare 100 ml, dissolve 0.40 g of solid $NaOH$ in about 90 ml of water and adjust the final volume to 100 ml using additional water. Shake well to mix the solution. It is advisable to analyze a blank sample of this reagent *prior* to sampling, since the reagent blank value obtained during the field sample analysis must be less than 10 percent of the sample values (see method 9057).

3.3.2.5.5 Filter. Teflon mat Pallflex* TX40HI75 or equivalent. Locate in a glass, quartz, or Teflon filter holder with a Teflon filter support in a filter box heated to 250 °F.

3.3.2.5.6 Stopcock grease. Acetone-insoluble, heat-stable silicone grease may be used, if necessary.

3.3.2.5.7 Silica gel. Indicating type, 6- to 16-mesh. If the silica gel has been used previously, dry at 175 °C (350 °F) for 2 hours. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used.

3.3.2.6 Sample Collection, Preservation, and Handling.

3.3.2.6.1 Sample collection is described in this method. The analytical procedures are described in method 9057.

3.3.2.6.2 Samples should be stored in clearly labeled, tightly sealed containers between sample recovery and analysis. They may be analyzed up to four weeks after collection.

3.3.2.7 Procedure.

3.3.2.7.1 Calibration. Section 3.5.2 of EPA's Quality Assurance Handbook, Volume III (Reference 4) may be used as a guide for these operations.

3.3.2.7.1.1 Dry Gas Metering System.

3.3.2.7.1.1.1 Initial calibration. Before its initial use in the field, first leak check the metering system (sample line, drying tube, if used, vacuum gauge, needle valve, pump, rate meter, and dry gas meter) as follows: plug the inlet end of the sampling line, pull a vacuum of 250 mm (10 in) Hg, plug off the outlet of the dry gas meter, and turn off the pump. The vacuum should remain stable for 30 seconds. Carefully release the vacuum from the system by slowly removing the plug from the sample line inlet. Remove the sampling line (and drying tube, if applicable), and connect the dry gas metering system to an appropriately sized wet test meter (e.g., 1 liter per revolution). Make three independent calibration runs, using at least five revolutions of the dry gas meter per run. Calculate the calibration factor, Y (wet test meter calibration volume divided by the dry gas meter volume, with both volumes adjusted to the same reference temperature and pressure), for each run, and average the results. If any Y value deviates by more than 2 percent from the average, the metering system is unacceptable for use. Otherwise, use the average as the calibration factor for subsequent test runs.

3.3.2.7.1.1.2 Post-test calibration check. After each field test series, conduct a calibration check as in section 3.3.2.7.1.1.1 above, except for the following variations: (a) The leak check is not to be conducted, (b) three or more revolutions of the dry gas meter may be used, (c) only two independent runs need to be made. If the calibration factor does not deviate by more than 5 percent from the initial calibration factor (determined in section 3.3.2.7.1.1.1), the dry gas meter volumes obtained during the test series are acceptable. If the calibration factor deviates by more than 5 percent, recalibrate the metering system as section 3.3.2.7.1.1.1, and for the calculations, use the calibration factor (initial or recalibration) that yields the lower gas volume for each test run.

3.3.2.7.1.2 Thermometer(s). Prior to each field test, calibrate against mercury-in-glass thermometers at ambient temperature. If the thermometer being calibrated reads within 2 °C (2.6 °F) of the mercury-in-glass thermometer, it is acceptable. If not, adjust the thermometer or use an appropriate correction factor.

3.3.2.7.1.3 Rate meter. The rate meter need not be calibrated, but should be cleaned and maintained according to the manufacturer's instructions.

3.3.2.7.1.4 Barometer. Prior to each field test, calibrate against a mercury barometer. The field barometer should agree within 0.1

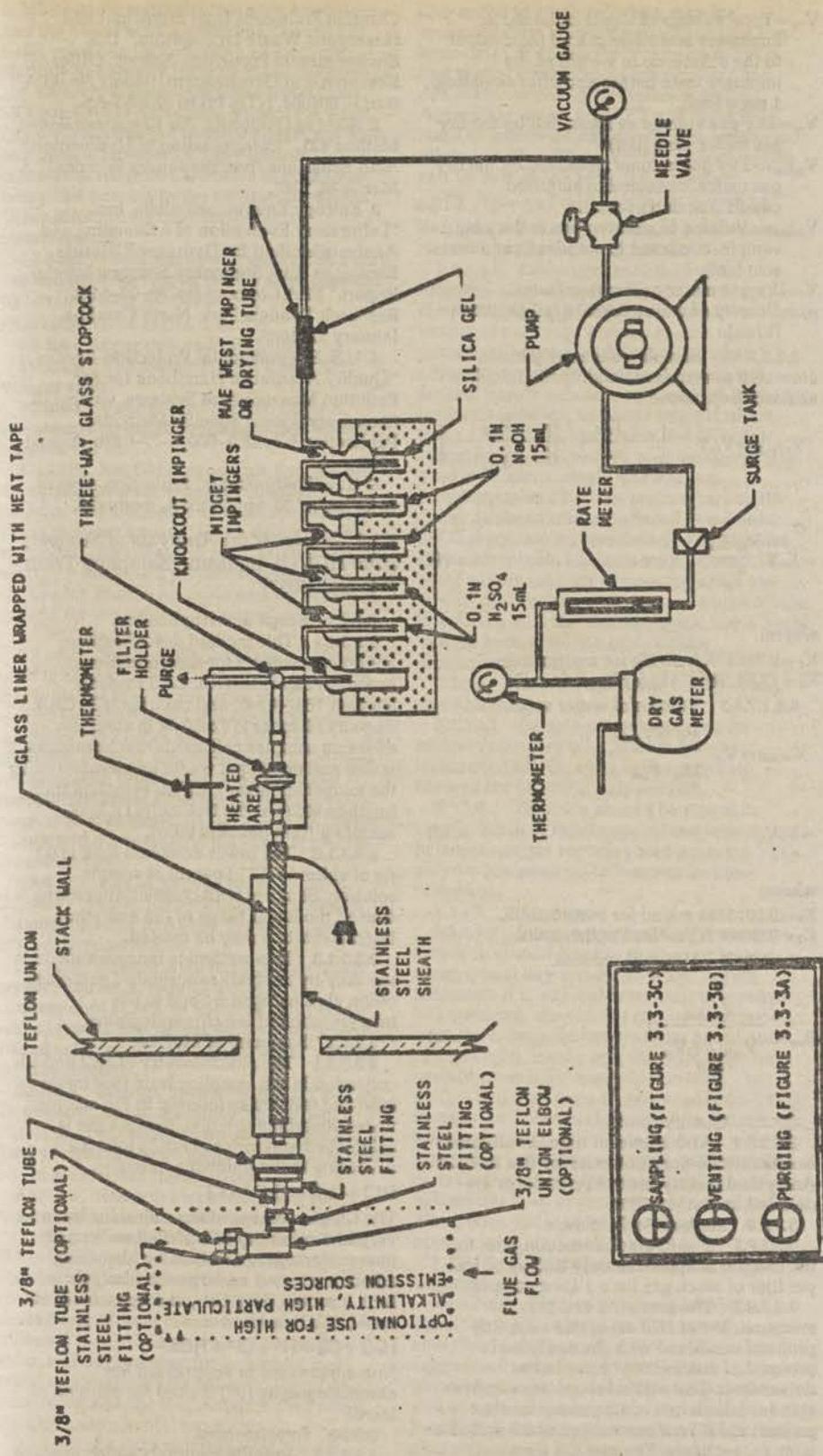
in. Hg with the mercury barometer. If it does not, the field barometer should be adjusted.

3.3.2.7.2 Sampling.

3.3.2.7.2.1 Preparation of collection train. Prepare the sampling train as follows: The first or knockout impinger should have a shortened stem and be left empty to condense moisture in the gas stream. The next two midget impingers should each be filled with 15 ml of 0.1 N H_2SO_4 , and the fourth and fifth impingers should each be filled with 15 ml of 0.1 N $NaOH$. Place a fresh charge of silica gel, or equivalent, in the Mae West impinger (or the drying tube). Connect the impingers in series with the knockout impinger first, followed by the two impingers containing the acidified reagent, the two impingers containing the alkaline reagent, and the Mae West impinger containing the silica gel. If the moisture will be determined, weigh the impinger assembly to the nearest ±0.5 g and record the weight.

3.3.2.7.2.2 Leak check procedures. Leak check the probe and three-way stopcock prior to inserting the probe into the stack. Connect the stopcock to the outlet of the probe, and connect the sample line to the needle valve. Plug the probe inlet, turn on the sample pump, and pull a vacuum of at least 250 mm Hg (10 in. Hg). Turn off the needle valve, and note the vacuum gauge reading. The vacuum should remain stable for at least 30 seconds. Place the probe in the stack at the sampling location, and adjust the filter heating system to 250 °F and the probe and stopcock heating systems to a temperature sufficient to prevent water condensation. Connect the first impinger to the stopcock, and connect the sample line to the last impinger and the needle valve. Upon completion of a sampling run, remove the probe from the stack and leak check as described above. If a leak has occurred, the sampling run must be voided. Alternatively, the portion of the train behind the probe may be leak checked between multiple runs at the same site as follows: Close the stopcock to the first impinger (see Figure 3.3-3A), and turn on the sample pump. Pull a vacuum of at least 250 mm Hg (10 in. Hg), turn off the needle valve, and note the vacuum gauge reading. The vacuum should remain stable for at least 30 seconds. Release the vacuum on the impinger train by turning the stopcock to the vent position to permit ambient air to enter (see Figure 3.3-3B). If this procedure is used, the full train leak check described above must be conducted following the final run and all preceding sampling runs voided if a leak has occurred.

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Figure 3.3-3 Midget Impinger HCl/C1₂ Sampling Train

3.3.2.7.2.3 Purge procedure. Immediately prior to sampling, connect the purge line to the stopcock and turn the stopcock to permit the purge pump to purge the probe (see Figure 3.3-3A). Turn on the purge pump, and adjust the purge rate to 2 liters/min. Purge for at least 5 minutes prior to sampling.

3.3.2.7.2.4 Sample collection. Turn on sample pump, pull a slight vacuum of approximately 25 mm Hg (1 in. Hg) on the impinger train, and turn the stopcock to permit stack gas to be pulled through the impinger train (see Figure 3.3-3C). Adjust the sampling rate to 2 liters/min, as indicated by the rate meter, and maintain this rate within 10 percent during the entire sampling run. Take readings of the dry gas meter, the dry gas meter temperature, rate meter, and vacuum gauge at least once every five minutes during the run. A sampling time of one hour is recommended. However, if the expected condensate catch for this sampling run duration will exceed the capacity of the sampling train, (1) a larger knockout impinger may be used or (2) two sequential half-hour runs may be conducted. At the conclusion of the sampling run, remove the train from the stack, cool, and perform a leak check as described in section 3.3.2.7.2.2.

3.3.2.7.3 Sample recovery. Following sampling, disconnect the impinger train from the remaining sampling equipment at the inlet to the knockout impinger and the outlet to the last impinger. If performing a moisture determination, wipe off any moisture on the outside of the train and any excess silicone grease at the inlet and outlet openings; weigh the train to the nearest 0.5 g and record this weight. Then disconnect the impingers from each other. Quantitatively transfer the contents of the first three impingers (the knockout impinger and the two 0.1 N H₂SO₄ impingers) to a leak-free storage bottle. Add the water rinses of each of these impingers and connecting glassware from the second set of impingers (containing the 0.1 N NaOH) should be recovered in a similar manner if a Cl₂ analysis is desired. The sample bottle should be marked so that if any sample is lost during transport, a correction proportional to the lost volume can be applied. Save portions of the 0.1 N H₂SO₄ and 0.1 N NaOH used as impinger reagents as reagent blanks. Take 50 ml of each and place in separate leak-free storage bottles. Label and mark the fluid levels as previously described.

3.3.2.7.4 Calculations. Retain at least one extra decimal figure beyond those contained in the available data in intermediate calculations, and round off only the final answer appropriately.

3.3.2.7.4.1 Nomenclature.

B_w=Water vapor in the gas stream, proportion by volume.

M_w=Molecular weight of water, 18.0 g/g-mole (18.0 lb/lb-mole).

P_{bar}=Barometric pressure at the exit orifice of the dry gas meter, mm Hg (in. Hg).

P_{std}=Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

R=Ideal gas constant, 0.06236 mm Hg·m³/°K-g-mole (21.85 in. Hg·ft³/°R-lb-mole).

T_m=Average dry gas meter absolute temperature, °K (°R).

T_{std}=Standard absolute temperature, 293 °K (528 °R).

V_{ic}=Total volume of liquid collected in impingers and silica gel, ml (equivalent to the difference in weight of the impinger train before and after sampling, 1 mg = 1 ml).

V_m=Dry gas volume as measured by the dry gas meter, dcm (dcf).

V_{m(std)}=Dry gas volume measured by the dry gas meter, corrected to standard conditions, dscm (dscf).

V_{w(std)}=Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).

Y=Dry gas meter calibration factor.

ρ_w=Density of water, 0.9982 g/ml (0.002201 lb/ml).

3.3.2.7.4.2 Sample volume, dry basis, corrected to standard conditions. Calculate as described below:

$$V_{m(std)} = V_m Y \left[\frac{T_{std}}{T_m} \right] \left[\frac{P_{bar}}{P_{std}} \right]$$

$$= K_1 Y \frac{V_m P_{bar}}{T_m} \quad (1)$$

where:

K₁=0.3858 °K/mm Hg for metric units.

K₁=17.64 °R/in. Hg for English units.

3.3.2.7.4.3 Volume of water vapor.

$$V_{w(std)} = V_{ic} \frac{P_w RT_{std}}{M_w P_{std}}$$

$$= K_2 V_{ic} \quad (2)$$

where:

K₂=0.0013333 m³/ml for metric units.

K₂=0.04707 ft³/ml for English units.

3.3.2.7.4.4 Moisture content.

$$B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_w} \quad (3)$$

3.3.2.8 Quality Control.

3.3.2.8.1 At the present time, a validated audit material does not exist for this method. Analytical quality control procedures are detailed in Method 9057.

3.3.2.9 Method Performance.

3.3.2.9.1 The in-stack detection limit for the method is approximately 0.08 µg of HCl per liter of stack gas for a 1-hour sample.

3.3.2.9.2 The precision and bias for measurement of HCl using this sampling protocol combined with the analytical protocol of method 9057 have been determined. The within laboratory relative standard deviation is 6.2 percent and 3.2 percent at HCl concentrations of 3.9 and 15.3 ppm, respectively. The method does not exhibit any bias for HCl when sampling at Cl₂ concentrations less than 50 ppm.

References

- Steinsberger, S.C. and J.H. Margeson, "Laboratory and Field Evaluation of a Methodology for Determination of Hydrogen

Chloride Emissions from Municipal and Hazardous Waste Incinerators," U.S. Environmental Protection Agency, Office of Research and Development, Report No. EPA 600/3-89/064, NTIS PB 89 220586-AS.

2. State of California, Air Resources Board, Method 421, "Determination of Hydrochloric Acid Emissions from Stationary Sources," March 18, 1987.

3. Entropy Environmentalists, Inc., "Laboratory Evaluation of a Sampling and Analysis Method for Hydrogen Chloride Emissions from Stationary Sources: Interim Report," EPA Contract No. 68-02-4442, Research Triangle Park, North Carolina, January 22, 1988.

4. U.S. Environmental Protection Agency, "Quality Assurance Handbook for Air Pollution Measurement Systems, volume III, Stationary Source Specific Methods," Publication No. EPA-600/4-77-027b, August 1977.

5. U.S. Environmental Protection Agency, 40 CFR part 60, appendix A, method 6.

3.3.3 Protocol for Analysis of Samples from HCl/Cl₂ Emission Sampling Train (Method 9057)

3.3.3.1 Scope and Application.

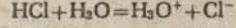
3.3.3.1.1 This method describes the analytical protocol for determination of hydrogen chloride (HCl, CAS Registry Number 7647-01-0) and chloride (Cl₂, CAS Registry Number 7782-50-5) in stack gas emission samples collected from hazardous waste and municipal waste incinerators using the midget impinger HCl/Cl₂ sampling train (method 0051) or the isokinetic HCl/Cl₂ sampling train (method 0050).

3.3.3.1.2 The lower detection limit is 0.1 µg of chloride (Cl⁻) per ml of sample solution. Samples with concentrations which exceed the linear range of the analytical instrumentation may be diluted.

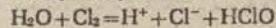
3.3.3.1.3 This method is recommended for use only by analysts experienced in the use of ion chromatography and in the interpretation of ion chromatograms.

3.3.3.2 Summary of Method.

3.3.3.2.1 The stoichiometry of HCl and Cl₂ collection in the sampling train (see methods 0050 and 0051) is as follows: In the acidified water absorbing solution, the HCl gas is solubilized and forms chloride ions (Cl⁻) according to the following formula:



The Cl₂ gas present in the emissions has a very low solubility in acidified water and passes through to the alkaline absorbing solution where it undergoes hydrolysis to form a proton (H⁺), Cl⁻, and hypochlorous acid (HClO) as shown:



Non-suppressed or suppressed ion chromatography (IC) is used for analysis of the Cl⁻.

3.3.3.3 Interferences.

3.3.3.3.1 Volatile materials which produce chloride ions upon dissolution during sampling are obvious interferences in the measurement of HCl. One likely interferant is diatomic chlorine (Cl₂) gas which disproportionates to HCl and hypochlorous acid (HOCl) upon dissolution in water. Cl₂ gas

exhibits a low solubility in water, however, and the use of acidic rather than neutral or basic solutions for collection of hydrogen chloride gas greatly reduces the dissolution of any chlorine present. Sampling a 400 ppm HCl gas stream containing 50 ppm Cl₂ with this method does not cause a significant bias. Sampling a 220 ppm HCl gas stream containing 180 ppm Cl₂ results in a positive bias of 3.4 percent in the HCl measurement. Other interferers have not been encountered.

3.3.3.3.2 Reducing agents such as SO₂ may cause a positive bias in the Cl₂ measurement by the following reaction:



3.3.3.4 Apparatus and Materials.

3.3.3.4.1 Volumetric Flasks. Class A, various sizes.

3.3.3.4.2 Volumetric Pipettes. Class A, assortment to dilute samples to calibration range of the IC.

3.3.3.4.3 Ion Chromatograph. Suppressed or non-suppressed, with a conductivity detector and electronic integrator operating in the peak area mode. Other detectors, a strip chart recorder, and peak heights may be used provided the 5 percent repeatability criteria for sample analysis and the linearity criteria for the calibration curve can be met.

3.3.3.5 Reagents.

3.3.3.5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

3.3.3.5.2 ASTM Type II Water (ASTM D1193-77 (1983)). All references to water in the method refer to ASTM Type II unless otherwise specified.

3.3.3.5.3 Sulfuric acid (0.1 N), H₂SO₄. To prepare 100 ml, slowly add 0.28 ml of concentrated H₂SO₄ to about 90 ml of water while stirring, and adjust the final volume to 100 ml using additional water. Shake well to mix the solution.

3.3.3.5.4 Sodium hydroxide (0.1 N), NaOH. To prepare 100 ml, dissolve 0.40 g of solid NaOH in about 90 ml of water and adjust the final volume to 100 ml using additional water. Shake well to mix the solution.

3.3.3.5.5 Reagent blank solutions. A separate blank solution of each sampling train reagent used and collected in the field (0.1 N H₂SO₄ and 0.1 N NaOH) should be prepared for analysis with the field samples. For midget impinger train sample analysis, dilute 30 ml of each reagent with rinse water collected in the field as a blank to the final volume of the samples; for isokinetic train sample analysis, dilute 200 ml to the same final volume as the field samples also using the blank sample of rinse water.

3.3.3.5.6 Sodium chloride, NaCl, stock standard solution. Solutions containing a nominal certified concentration of 1000 mg/L NaCl are commercially available as convenient stock solutions from which working standards can be made by appropriate volumetric dilution. Alternately,

concentrated stock solutions may be produced from reagent grade NaCl that has been dried at 110 °C for two or more hours and then cooled to room temperature in a desiccator immediately before weighing. Accurately weigh 1.6 to 1.7 g of the dried NaCl to within 0.1 mg, dissolve in water, and dilute to 1 liter. The exact Cl⁻ concentration can be calculated using the equation:

$$\mu\text{g Cl}^-/\text{ml} = \text{g of NaCl} \times 10^3 \times 35.453 / 58.44$$

Refrigerate the stock standard solutions and store no longer than one month.

3.3.3.5.7 Chromatographic eluent.

Effective eluents for non-suppressed ion chromatography using a resin- or silica-based weak ion exchange column are a 4 mM potassium hydrogen phthalate solution, adjusted to a pH of 4.0 using a saturated sodium borate solution, and a mM 4-hydroxy benzoate solution, adjusted to a pH of 8.6 using 1 N sodium hydroxide. An effective eluent for suppressed ion chromatography is a solution containing 3 mM sodium bicarbonate and 2.4 mM sodium carbonate. Other dilute solutions buffered to a similar pH that contain no ions interfering with the chromatographic analysis may be used. If, using suppressed ion chromatography, the "water dip" resulting from sample injection is interfering with the chlorine peak, use a 2 mM sodium hydroxide/2.4 mM sodium bicarbonate eluent.

3.3.3.6 Sample Collection, Preservation, and Handling.

3.3.3.6.1 Sample collection using the midget impinger HCl/Cl₂ train or the isokinetic HCl/Cl₂ train is described in Method 0051 or 0050, respectively.

3.3.3.6.2 Samples should be stored in clearly labeled, tightly sealed containers between sample recovery and analysis. They may be analyzed up to four weeks after collection.

3.3.3.7 Procedure.

3.3.3.7.1 Sample preparation for analysis. Check the liquid level in each sample, and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, the volume can be determined from the difference between the initial and final solution levels, and this value can be used to correct the analytical results. For midget impinger train samples, quantitatively transfer each sample solution to a 100 ml volumetric flask and dilute to 100 ml with water. For isokinetic sampling train samples, quantitatively transfer each sample to a volumetric flask or graduated cylinder and dilute with water to a final volume appropriate for all samples.

3.3.3.7.2 Calibration of Ion Chromatograph.

3.3.3.7.2.1 The ion chromatographic conditions will depend on the type of analytical column used and whether suppressed or non-suppressed ion chromatography is used. Prior to calibration and sample analysis, establish a stable baseline. Next, inject a sample of water, and determine if any Cl⁻ appears in the chromatogram. If Cl⁻ is present, repeat the load/injection procedure until no Cl⁻ is present.

3.3.3.7.2.2 To prepare the calibration standards, dilute given amounts (1.0 ml or greater) of the stock standard solution to

convenient volumes, using 0.1 H₂SO₄ or 0.1 NaOH as appropriate. Prepare at least four standards that are within the linear range of the field samples. Inject the calibration standards, starting with the lowest concentration standard first, both before and after injection of the quality control check sample, reagent blank, and field samples. This allows compensation for any instrument drift occurring during sample analysis.

3.3.3.7.2.3 Determine the peak areas, or heights, of the standards and plot individual values versus Cl⁻ concentrations in µg/ml. Draw a smooth curve through the points. Use linear regression to calculate a formula describing the resulting linear curve.

3.3.3.7.3 Sample analysis. Between injections of the series of calibration standards, inject in duplicate the reagent blanks and the field samples, including a matrix spike sample. Measure the areas or heights (same as done for the calibration standards) of the Cl⁻ peaks. Use the average response to determine the concentrations of the field samples, matrix spike, and reagent blanks using the linear calibration curve. The results for a reagent blank should not exceed 10 percent of the corresponding value for a field sample.

3.3.3.7.4 Calculations. Retain at least one extra decimal figure beyond those contained in the available data in intermediate calculations, and round off only the final answer appropriately.

3.3.3.7.4.1 Total µg HCl per sample.

Calculate as described below:

$${}^m\text{HCl} = (\text{S} - \text{B}) \times \text{V}_s \times 36.46 / 35.453 \quad (1)$$

where:

${}^m\text{HCl}$ = Mass of HCl in sample, µg,

S = Analysis of sample, µg Cl⁻/ml,

B = Analysis of reagent blank, µg Cl⁻/ml,

V_s = Volume of filtered and diluted sample, ml,

36.46 = Molecular weight of HCl, µg/µg-mole, and

35.45 = Atomic weight of Cl⁻, µg/µg-mole.

3.3.3.7.4.2 Total µg Cl₂ per sample.

Calculate as described below:

$${}^m\text{Cl}_2 = (\text{S} - \text{B}) \times \text{V}_2 \times 70.91 / 35.45 \quad (2)$$

where:

${}^m\text{Cl}_2$ = Mass of Cl₂ in sample, µg,

70.91 = Molecular weight of Cl₂, µg/µg-mole, and

35.45 = Atomic weight of Cl⁻, µg/µg-mole.

3.3.3.7.4.3 Concentration of HCl in the flue gas. Calculate as described below:

$$C = K \times m / V_{m(\text{std})} \quad (3)$$

where:

C = Concentration of HCl or Cl₂, dry basis, mg/dscm,

K = 10⁻³ mg/µg,

m = Mass of HCl or Cl₂ in sample, µg, and

V_{m(std)} = Dry gas volume measured by the dry gas meter, corrected to standard conditions, dscm (from Method 0050 or Method 0051).

3.3.3.8 Quality Control.

3.3.3.8.1 At the present time, a validated audit material does not exist for this method. However, it is strongly recommended that a quality control check sample and a matrix spike sample be used.

3.3.3.8.1.1 Quality control check sample. Chloride solutions of reliably known

concentrations are available for purchase from the National Bureau of Standards (SRM 3182). The QC check sample should be prepared in the appropriate absorbing reagent at a concentration approximately equal to the mid range calibration standard. The quality control check sample should be injected in duplicate immediately after the calibration standards have been injected for the first time. The Cl⁻ value obtained for the check sample using the final calibration curve should be within 10 percent of the known value for the check sample.

3.3.3.8.1.2 Matrix spike sample. A portion of at least one field sample should be used to prepare a matrix spike sample. Spike the sample aliquot in the range of the expected concentration. Analyze the matrix spike sample in duplicate along with the field samples. Based on the matrix spike results, determine the recovery for the spiked material. This should be within 10 percent of the known spike value.

3.3.3.9 Method Performance.

3.3.3.9.1 The lower detection limit of the analytical method is 0.1 µg of Cl⁻ per ml of sample solution. Samples with concentrations which exceed the linear range of the IC may be diluted.

3.3.3.9.2 The precision and bias for analysis of HCl using this analytical protocol have been measured in combination with the midget impinger HCl/Cl₂ train (method 0051) for sample collection. The within-laboratory relative standard deviation is 6.2 percent and 3.2 percent at HCl concentrations of 3.9 and

15.3 ppm, respectively. The method does not exhibit any bias for HCl when sampling at Cl₂ concentrations less than 50 ppm.

References

1. Steinsberger, S.C. and J.H. Margeson, "Laboratory and Field Evaluation of a Methodology for Determination of Hydrogen Chloride Emissions from Municipal and Hazardous Waste Incinerators," U.S. Environmental Protection Agency, Office of Research and Development, Report No. EPA 600/3-89/064, NTIS PB89 220586-AS.
2. State of California, Air Resources Board, Method 421, "Determination of Hydrochloric Acid Emissions from Stationary Sources" March 18, 1987.
3. Entropy Environmentalists, Inc., "Laboratory Evaluation of a Sampling and Analysis Method for Hydrogen Chloride emissions from Stationary Sources: Interim Report," EPA Contract No. 68-02-4442, Research Triangle Park, North Carolina, January 22, 1988.

3.4 Determination of Polychlorinated Dibenzo-p-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) From Stationary Sources (Method 23)

3.4.1 Applicability and Principle

3.4.1.1 Applicability. This method is applicable to the determination of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) from stationary sources.

3.4.1.2 Principle. A sample is withdrawn from the gas stream isokinetically and collected in the sample probe, on a glass fiber filter, and on a packed column of adsorbent material. The sample cannot be separated into a particle vapor fraction. The PCDDs and PCDFs are extracted from the sample, separated by high resolution gas chromatography, and measured by high resolution mass spectrometry.

3.4.2 Apparatus

3.4.2.1 Sampling. A schematic of the sampling train used in this method is shown in Figure 3.4-1. Sealing greases may not be used in assembling the train. The train is identical to that described in Section 2.1 of Method 5 (40 CFR part 60, appendix A) with the following additions:

3.4.2.1.1 Reagents. Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

3.4.2.1.2 Nozzle. The nozzle shall be made of nickel, nickel-plated stainless steel, quartz, or borosilicate glass.

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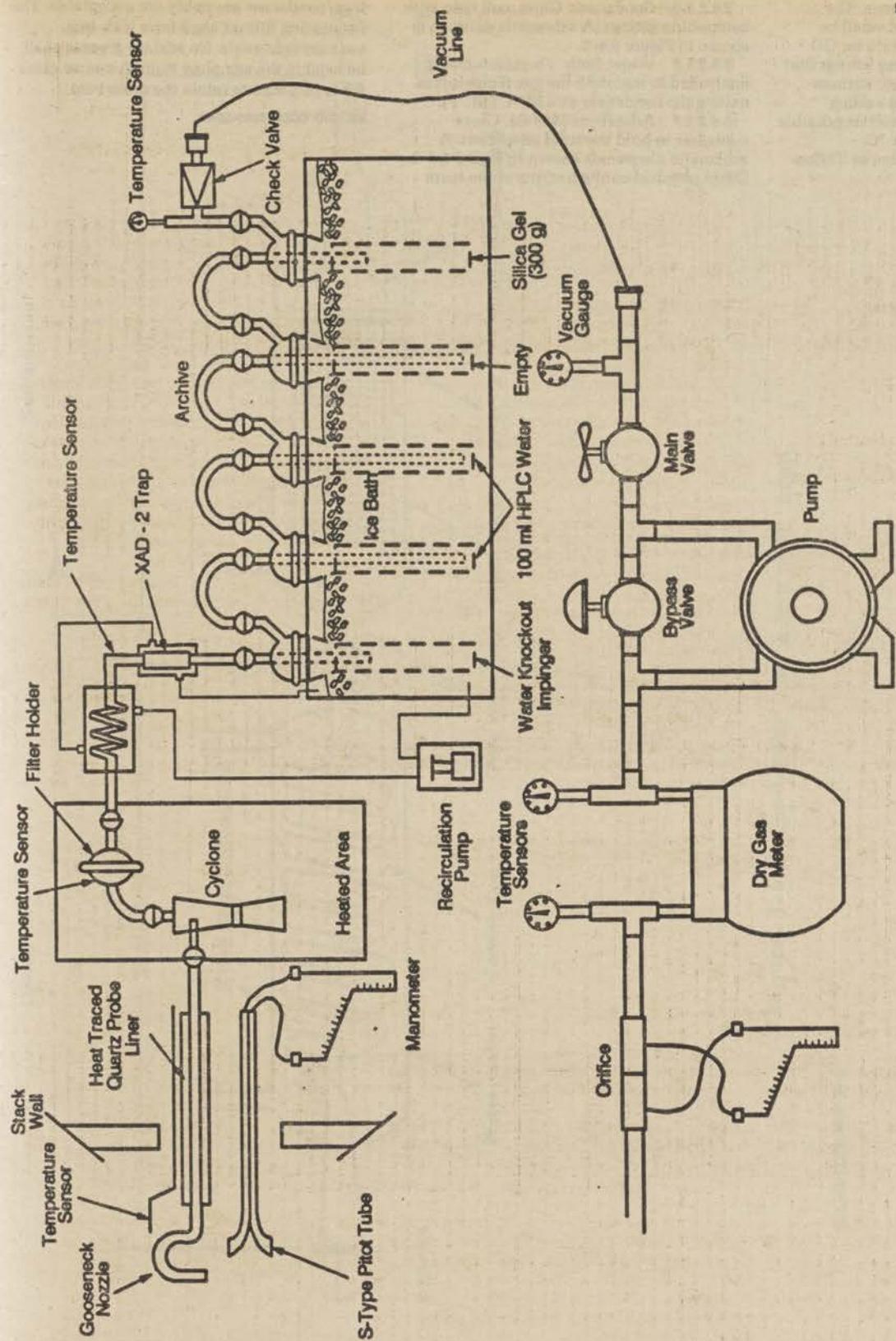


Figure 3.4-1 Sampling Train

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3.4.2.1.3 Sample Transfer Lines. The sample transfer lines, if needed, shall be heat-traced; heavy walled TFE (½ in. OD with ⅛ in. wall) with connecting fittings that are capable of forming leak-free, vacuum-tight connections without using sealing greases. The line shall be as short as possible and must be maintained at 120 °C.

3.4.2.1.4 Filter Support. Teflon or Teflon-coated wire.

3.4.2.1.5 Condenser. Glass, coil type with compatible fittings. A schematic diagram is shown in Figure 3.4-2.

3.4.2.1.6 Water Bath. Thermostatically controlled to maintain the gas temperature exiting the condenser at <20 °C (68 °F).

3.4.2.1.7 Adsorbent Module. Glass container to hold the solid adsorbent. A schematic diagram is shown in Figure 3.4-2. Other physical configurations of the resin

trap/condenser assembly are acceptable. The connecting fittings shall form leak-free, vacuum tight seals. No sealant greases shall be used in the sampling train. A coarse glass frit is included to retain the adsorbent.

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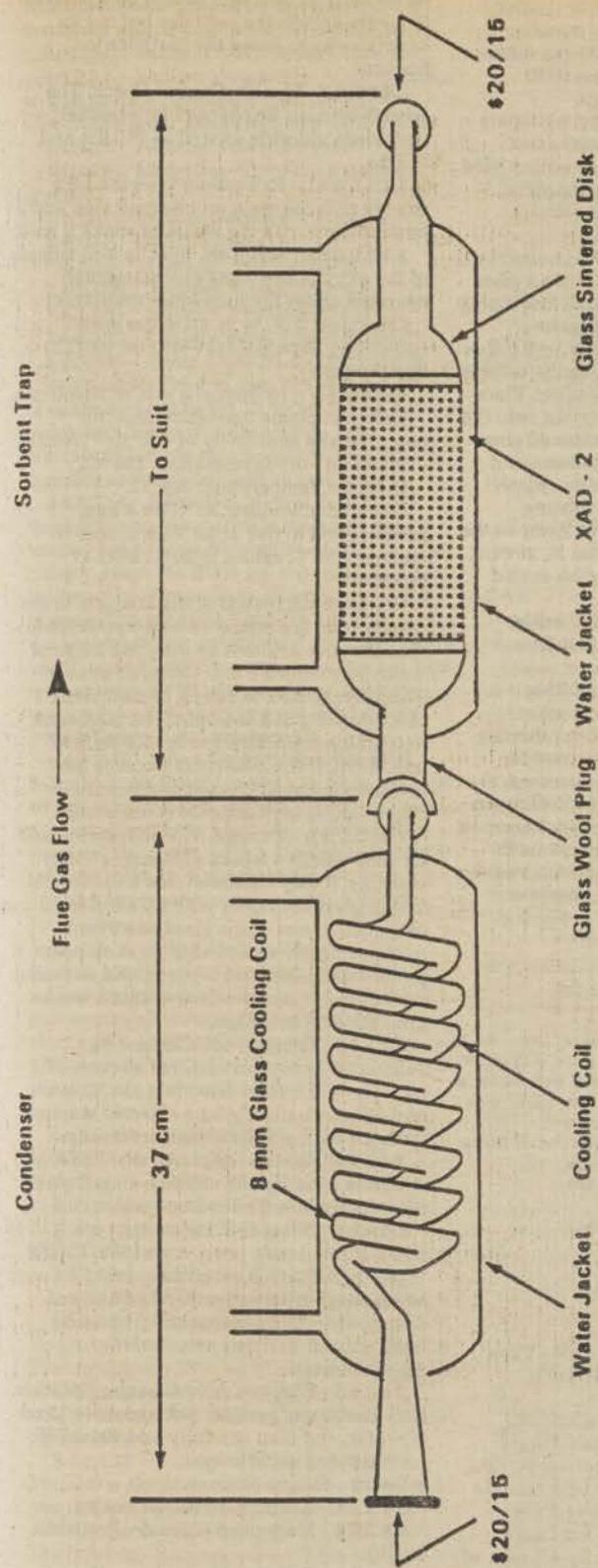


Figure 3.4-2 Condenser and adsorbent trap

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3.4.2.2 Sample Recovery.

3.4.2.2.1 Fitting Caps. Ground glass. Teflon tape, or aluminum foil (Section 3.4.2.2.6) to cap off the sample-exposed sections of the train.

3.4.2.2.2 Wash Bottles. Teflon, 500-ml.

3.4.2.2.3 Probe-Liner Probe-Nozzle, and Filter-Holder Brushes. Inert bristle brushes with precleaned stainless steel or Teflon handles. The probe brush shall have extensions of stainless steel or Teflon, at least as long as the probe. The brushes shall be properly sized and shaped to brush out the nozzle, probe liner, and transfer line, if used.

3.4.2.2.4 Filter Storage Container. Sealed filter holder, wide-mouth amber glass jar with Teflon-lined cap, or glass petri dish.

3.4.2.2.5 Balance. Triple beam.

3.4.2.2.6 Aluminum Foil. Heavy duty, hexane-rinsed.

3.4.2.2.7 Metal Storage Container. Airtight container to store silica gel.

3.4.2.2.8 Graduated Cylinder. Glass, 250-ml with 2-ml graduation.

3.4.2.2.9 Glass sample Storage container. Amber glass bottle for sample glassware washes, 500- or 1000-ml, with leak-free Teflon-lined caps.

3.4.2.3 Analysis.

3.4.2.3.1 Sample Container. 125- and 250-ml flint glass bottles with Teflon-lined caps.

3.4.2.3.2 Test Tube. Glass.

3.4.2.3.3 Soxhlet Extraction Apparatus. Capable of holding 43 × 123 mm extraction thimbles.

3.4.2.3.4 Extraction Thimble. Glass, precleaned cellulosic, or glass fiber.

3.4.2.3.5 Pasteur Pipettes. For preparing liquid chromatographic columns.

3.4.2.3.6 Reacti-vials. Amber glass, 2-ml, silanized prior to use.

3.4.2.3.7 Rotary Evaporator. Buchi/Brinkman RF-121 or equivalent.

3.4.2.3.8 Nitrogen Evaporator

Concentrator. N-Evap Analytical Evaporator Model III or equivalent.

3.4.2.3.9 Separatory Funnels. Glass, 2-liter.

3.4.2.3.10 Gas Chromatograph. Consisting of the following components:

3.4.2.3.10.1 Oven. Capable of maintaining the separation column at the proper operating temperature ±1 °C and performing programmed increases in temperature at rates of at least 3 °C/min.

3.4.2.3.10.2 Temperature Gauge. To monitor column, oven, detector, and exhaust temperatures ±1 °C.

3.4.2.3.10.3 Flow System. Gas metering system to measure sample, fuel, combustion gas, and carrier gas flows.

3.4.2.3.10.4 Capillary Columns. A fused silica column, 60 × 0.25 mm inside diameter (ID), coated with DB-5 and a fused silica column, 30 m × 0.25 mm ID coated with DB-225. Other column systems may be used provided that the user is able to demonstrate, using calibration and performance checks, that the column system is able to meet the specifications of section 3.4.6.1.2.2.

3.4.2.3.11 Mass Spectrometer. Capable of routine operation at a resolution of 1:10000 with a stability of ±5 ppm.

3.4.2.3.12 Data System. Compatible with the mass spectrometer and capable of monitoring at least five groups of 25 ions.

3.4.2.3.13 Analytical Balance. To measure within 0.1 mg.

3.4.3 Reagents

3.4.3.1 Sampling.

3.4.3.1.1 Filters. Glass fiber filters, without organic binder, exhibiting at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3-micron dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM Standard Method D 2986-71 (Reapproved 1978) (incorporated by reference—see § 60.17).

3.4.3.1.1.1 Precleaning. All filters shall be cleaned before their initial use. Place a glass extraction thimble, 1 g of silica gel, and a plug of glass wool into a Soxhlet apparatus, charge the apparatus with toluene, and reflux for a minimum of 3 hours. Remove the toluene and discard it, but retain the silica gel. Place no more than 50 filters in the thimble onto the silica gel bed and top with the cleaned glass wool. Charge the Soxhlet with toluene and reflux for 16 hours. After extraction, allow the Soxhlet to cool, remove the toluene extract, and retain it for analysis. Remove the filters and dry them under a clean N₂ stream. Store the filters in a glass petri dish sealed with Teflon tape.

3.4.3.1.2 Adsorbent Resin. Amberlite XAD-2 resin, thoroughly cleaned before initial use.

3.4.3.1.2.1 Cleaning Procedure. This procedure may be carried out in a giant Soxhlet extractor. An all-glass filter thimble containing an extra-coarse frit is used for extraction of XAD-2. The frit is recessed 10–15 mm above a cremated ring at the bottom of the thimble to facilitate drainage. The resin must be carefully retained in the extractor cup with a glass wool plug and a stainless steel ring because it floats on methylene chloride. This process involves sequential extraction in the following order:

Solvent	Procedure
Water	Initial rinse: Place resin in a beaker, rinse once with water, and discard. Fill with water a second time, let stand overnight, and discard.
Water	Extract with water for 8 hours.
Methanol	Extract for 22 hours.
Methylene Chloride	Extract for 22 hours.
Methylene Chloride (fresh)	Extract for 22 hours.

3.4.3.1.2.2 Drying.

3.4.3.1.2.2.1 Drying Column. Pyrex pipe, 10.2 cm ID by 0.6 m long, with suitable retainers.

3.4.3.1.2.2.2 Procedure. The adsorbent must be dried with clean inert gas. Liquid nitrogen from a standard commercial liquid nitrogen cylinder has proven to be a reliable source of large volumes of gas free from organic contaminants. Connect the liquid nitrogen cylinder to the column by a length of cleaned copper tubing, 0.95 cm ID, coiled to pass through a heat source. A convenient heat source is a water-bath heated from a steam line. The final nitrogen temperature should only be warm to the touch and not over 40 °C. Continue flowing nitrogen through the adsorbent until all the residual solvent is

removed. The flow rate should be sufficient to gently agitate the particles but not so excessive as to cause the particles to fracture.

3.4.3.1.2.3 Quality Control Check. The adsorbent must be checked for residual methylene chloride as well as PCDDs and PCDFs.

3.4.3.1.2.3.1 Extraction. Weigh a 1.0 g sample of dried resin into a small vial, add 3 ml of toluene, cap the vial, and shake it well.

3.4.3.1.2.3.2 Analysis. Inject a 2-μl sample of the extract into a gas chromatograph operated under the following conditions:

Column: 6 ft × ½ in. stainless steel containing 10 percent OV-101 on 100/120 Supelcoport.

Carrier Gas: Helium at a rate of 30 ml/min.

Detector: Flame ionization detector operated at a sensitivity of 4×10^{-11} A/mV.

Injection Port Temperature: 250 °C.

Detector Temperature: 305 °C.

Oven Temperature: 30 °C for 4 min; programmed to rise at 40 °C/min until it reaches 250 °C; return to 30 °C after 17 minutes.

Compare the results of the analysis to the results from the reference solution. Prepare the reference solution by injecting 2.5 μl of methylene chloride into 100 ml of toluene. This corresponds to 100 μg of methylene chloride per g of adsorbent. The maximum acceptable concentration is 1000 μg/g of adsorbent. If the adsorbent exceeds this level, drying must be continued until the excess methylene chloride is removed.

3.4.3.1.2.3.3 Storage. The adsorbent must be used within 4 weeks of cleaning. After cleaning, it may be stored in a wide mouth amber glass container with a Teflon-lined cap or placed in one of the glass adsorbent modules tightly sealed with glass stoppers. If precleaned adsorbent is purchased in sealed containers, it must be used within 4 weeks after the seal is broken.

3.4.3.1.3 Glass Wool. Cleaned by sequential immersion in three aliquots of methylene chloride, dried in a 110 °C oven, and stored in a methylene chloride-washed glass jar with a Teflon-lined screw cap.

3.4.3.1.4 Water. Deionized distilled and stored in a methylene chloride-rinsed glass container with a Teflon-lined screw cap.

3.4.3.1.5 Silica Gel. Indicating type, 8 to 16 mesh. If previously used, dry at 175 °C (350 °F) for two hours. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used, subject to the approval of the Administrator.

3.4.3.1.6 Chromic Acid Cleaning Solution. Dissolve 20 g of sodium dichromate in 15 ml of water, and then carefully add 400 ml of concentrated sulfuric acid.

3.4.3.2 Sample Recovery.

3.4.3.2.1 Acetone. Pesticide quality.

3.4.3.2.2 Methylene Chloride. Pesticide quality.

3.4.3.2.3 Toluene. Pesticide quality.

3.4.3.3 Analysis.

3.4.3.3.1 Potassium Hydroxide. ACS grade, 2-percent (weight/volume) in water.

3.4.3.3.2 Sodium Sulfate. Granulated, reagent grade. Purify prior to use by rinsing with methylene chloride and oven drying.

Store the cleaned material in a glass container with a Teflon-lined screw cap.

3.4.3.3.3 Sulfuric Acid. Reagent grade.

3.4.3.3.4 Sodium Hydroxide. 1.0 N. Weigh 40 g of sodium hydroxide into a 1-liter volumetric flask. Dilute to 1 liter with water.

3.4.3.3.5 Hexane. Pesticide grade.

3.4.3.3.6 Methylene Chloride. Pesticide grade.

3.4.3.3.7 Benzene. Pesticide grade.

3.4.3.3.8 Ethyl Acetate.

3.4.3.3.9 Methanol. Pesticide grade.

3.4.3.3.10 Toluene. Pesticide grade.

3.4.3.3.11 Nonane. Pesticide grade.

3.4.3.3.12 Cyclohexane. Pesticide grade.

3.4.3.3.13 Basic Alumina. Activity grade 1, 100–200 mesh. Prior to use, activate the alumina by heating for 16 hours at 130 °C before use. Store in a desiccator. Pre-activated alumina may be purchased from a supplier and may be used as received.

3.4.3.3.14 Silica Gel. Bio-Sil A, 100–200 mesh. Prior to use, activate the silica gel by heating for at least 30 minutes at 180 °C. After cooling, rinse the silica gel sequentially with methanol and methylene chloride. Heat the rinsed silica gel at 50 °C for 10 minutes, and then increase the temperature gradually to 180 °C over 25 minutes and maintain it at this temperature for 90 minutes. Cool at room temperature and store in a glass container with a Teflon-lined screw cap.

3.4.3.3.15 Silica Gel Impregnated with Sulfuric Acid. Combine 100 g of silica gel with 44 g of concentrated sulfuric acid in a screw-capped glass bottle and agitate thoroughly. Disperse the solids with a stirring rod until a uniform mixture is obtained. Store the mixture in a glass container with a Teflon-lined screw cap.

3.4.3.3.16 Silica Gel Impregnated with Sodium Hydroxide. Combine 39 g of 1 N sodium hydroxide with 100 g of silica gel in a screw-capped glass bottle and agitate thoroughly. Disperse solids with a stirring rod until a uniform mixture is obtained. Store the mixture in a glass container with a Teflon-lined screw cap.

3.4.3.3.17 Carbon/Celite. Combine 10.7 g of AX-21 carbon with 124 g of Celite 545 in a 250-ml glass bottle with a Teflon-lined screw cap. Agitate the mixture thoroughly until a uniform mixture is obtained. Store in the glass container.

3.4.3.3.18 Nitrogen. Ultra high purity.

3.4.3.3.19 Hydrogen. Ultra high purity.

3.4.3.3.20 Internal Standard Solution.

Prepare a stock standard solution containing the isotopically labeled PCDDs and PCDFs at the concentrations shown in Table 3.4-1 under the heading "Internal Standards" in 10 ml of nonane.

3.4.3.3.21 Surrogate Standard Solution.

Prepare a stock standard solution containing the isotopically labeled PCDDs and PCDFs at the concentrations shown in Table 1 under the heading "Surrogate Standards" in 10 ml of nonane.

3.4.3.3.22 Recovery Standard Solution.

Prepare a stock standard solution containing the isotopically labeled PCDDs and PCDFs at the concentrations shown in Table 1 under the heading "Recovery Standards" in 10 ml of nonane.

TABLE 3.4-1.—COMPOSITION OF THE SAMPLE FORTIFICATION AND RECOVERY STANDARDS SOLUTIONS

Analyte	Concentration (pg/μl)
Internal Standards:	
¹³ C ₁₂ -2,3,7,8-TCDD	100
¹³ C ₁₂ -1,2,3,7,8-PeCDD	100
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD	100
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD	100
¹³ C ₁₂ -2,3,7,8-TCDF	100
¹³ C ₁₂ -1,2,3,7,8-PeCDF	100
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF	100
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF	100
Surrogate Standards:	
³⁷ Cl ₂ -2,3,7,8-TCDD	100
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD	100
¹³ C ₁₂ -2,3,4,7,8-PeCDF	100
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	100
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	100
Recovery Standards:	
¹³ C ₁₂ -1,2,3,4-TCDD	500
¹³ C ₁₂ -1,2,3,7,8-HxCDD	500

3.4.4 Procedure

3.4.4.1 Sampling. The complexity of this method is such that, in order to obtain reliable results, analysts should be trained and experienced with the analytical procedures.

3.4.4.1.1 Preparation Prior to Analysis.

3.4.4.1.1.1 Cleaning Glassware. All glass components of the train upstream of and including the adsorbent module, shall be cleaned as described in Section 3A of the "Manual of Analytical Methods for the Analysis of Pesticides in Human and Environmental Samples." Special care shall be devoted to the removal of residual silicone grease sealants on ground glass connections of used glassware. Any residue shall be removed by soaking the glassware for several hours in a chromic acid cleaning solution prior to cleaning as described above.

3.4.4.1.1.2 Adsorbent Trap. The traps must be loaded in a clean area to avoid contamination. They may not be loaded in the field. Fill a trap with 20 to 40 g of XAD-2. Follow the XAD-2 with glass wool and tightly cap both ends of the trap. Add 100 μl of the surrogate standard solution (Section 3.4.3.3.21) to each trap.

3.4.4.1.1.3 Sample Train. It is suggested that all components be maintained according to the procedure described in APTD-0576.

3.4.4.1.1.4 Silica Gel. Weigh several 200 to 300 g portions of silica gel in an air-tight container to the nearest 0.5 g. Record the total weight of the silica gel plus container, on each container. As an alternative, the silica gel may be weighed directly in its impinger or sample holder just prior to sampling.

3.4.4.1.1.5 Filter. Check each filter against light for irregularities and flaws or pinhole leaks. Pack the filters flat in a clean glass container.

3.4.4.1.2 Preliminary Determinations. Same as Section 4.1.2 of Method 5.

3.4.4.1.3 Preparation of Collection Train.

3.4.4.1.3.1 During preparation and assembly of the sampling train, keep all train openings where contamination can enter, sealed until just prior to assembly or until sampling is about to begin.

Note: Do not use sealant grease in assembling the train.

3.4.4.1.3.2 Place approximately 100 ml of water in the second and third impingers, leave the first and fourth impingers empty, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the fifth impinger.

3.4.4.1.3.3 Place the silica gel container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

3.4.4.1.3.4 Assemble the train as shown in Figure 3.4-1.

3.4.4.1.3.5 Turn on the adsorbent module and condenser coil recirculating pump and begin monitoring the adsorbent module gas entry temperature. Ensure proper sorbent temperature gas entry temperature before proceeding and before sampling is initiated. It is extremely important that the XAD-2 adsorbent resin temperature never exceed 50 °C because thermal decomposition will occur. During testing, the XAD-2 temperature must not exceed 20 °C for efficient capture of the PCDDs and PCDFs.

3.4.4.1.4 Leak-Check Procedure. Same as method 5, section 4.1.4.

3.4.4.1.5 Sample Train Operation. Same as method 5, section 4.1.5.

3.4.4.2 Sample Recovery. Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Seal the nozzle end of the sampling probe with Teflon tape or aluminum foil.

When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe. Remove the probe from the train and close off both ends with aluminum foil. Seal off the inlet to the train with Teflon tape, a ground glass cap, or aluminum foil.

Transfer the probe and impinger assembly to the cleanup area. This area shall be clean and enclosed so that the chances of losing or contaminating the sample are minimized. Smoking, which could contaminate the sample, shall not be allowed in the cleanup area.

Inspect the train prior to and during disassembly and note any abnormal conditions, e.g., broken filters, colored impinger liquid, etc. Treat the samples as follows:

3.4.4.2.1 Container No. 1. Either seal the filter holder or carefully remove the filter from the filter holder and place it in its identified container. Use a pair of cleaned tweezers to handle the filter. If it is necessary to fold the filter, do so such that the particulate cake is inside the fold. Carefully transfer to the container any particulate matter and filter fibers which adhere to the filter holder gasket, by using a dry inert bristle brush and a sharp-edged blade. Seal the container.

3.4.4.2.2 Adsorbent Module. Remove the module from the train, tightly cap both ends, label it, cover with aluminum foil, and store it on ice for transport to the laboratory.

3.4.4.2.3 Container No. 2. Quantitatively recover material deposited in the nozzle, probe transfer lines, the front half of the filter

holder, and the cyclone, if used, first, by brushing while rinsing three times each with acetone, and then by rinsing the probe three times with methylene chloride. Collect all the rinses in Container No. 2.

Rinse the back half of the filter holder three times with acetone. Rinse the connecting line between the filter and the condenser three times with acetone. Soak the connecting line with three separate portions of methylene chloride for 5 minutes each. If using a separate condenser and adsorbent trap, rinse the condenser in the same manner as the connecting line. Collect all the rinses in Container No. 2 and mark the level of the liquid on the container.

3.4.4.2.4 Container No. 3. Repeat the methylene chloride-rinsing described in section 3.4.4.2.3 using toluene as the rinse solvent. Collect the rinses in Container No. 3 and mark the level of the liquid on the container.

3.4.4.2.5 Impinger Water. Measure the liquid in the first three impingers to within ± 1 ml by using a graduated cylinder or by weighing it to within ± 0.5 g by using a balance. Record the volume or weight of liquid present. This information is required to calculate the moisture content of the effluent gas.

Discard the liquid after measuring and recording the volume or weight.

3.4.4.2.6 Silica Gel. Note the color of the indicating silica gel to determine if it has been completely spent and make a mention of its condition. Transfer the silica gel from the fifth impinger to its original container and seal.

3.4.5 Analysis

All glassware shall be cleaned as described in section 3A of the "Manual of Analytical Methods for the Analysis of Pesticides in Human and Environmental Samples." All samples must be extracted within 30 days of collection and analyzed within 45 days of extraction.

3.4.5.1 Sample Extraction.

3.4.5.1.1 Extraction System. Place an extractable thimble (section 3.4.2.3.4), 1 g of silica gel, and a plug of glass wool into the Soxhlet apparatus, charge the apparatus with toluene, and reflux for a minimum of 3 hours. Remove the toluene and discard it, but retain the silica gel. Remove the extraction thimble from the extraction system and place it in a glass beaker to catch the solvent rinses.

3.4.5.1.2 Container No. 1 (Filter). Transfer the contents of container number 1 directly to the glass thimble of the extraction system and extract them simultaneously with the XAD-2 resin.

3.4.5.1.3 Adsorbent Module. Suspend the adsorbent module directly over the extraction thimble in the beaker (see section 3.4.5.1.1). The glass frit of the module should be in the up position. Using a Teflon squeeze bottle containing toluene, flush the XAD-2 into the thimble onto the bed of cleaned silica gel. Thoroughly rinse the glass module catching the rinsings in the beaker containing the thimble. If the resin is wet, effective extraction can be accomplished by loosely packing the resin in the thimble. Add the XAD-2 glass wool plug to the thimble.

3.4.5.1.4 Container No. 2 (Acetone and Methylene Chloride Rinse). Concentrate the

sample to a volume of about 1-5 ml using the rotary evaporator apparatus, at a temperature of less than 37 °C. Rinse the sample container three times with small portions of methylene chloride and add these to the concentrated solution and concentrate further to near dryness. This residue contains particulate matter removed in the rinse of the train probe and nozzle. Add the concentrate to the filter and the XAD-2 resin in the Soxhlet apparatus described in section 3.4.5.1.1.

3.4.5.1.5 Extraction. Add 100 μ l of the internal standard solution (section 3.4.3.3.20) to the extraction thimble containing the contents of the adsorbent cartridge, the contents of Container No. 1, and the concentrate from section 3.4.5.1.3. Cover the contents of the extraction thimble with the cleaned glass wool plug to prevent the XAD-2 resin from floating into the solvent reservoir of the extractor. Place the thimble in the extractor, and add the toluene contained in the beaker to the solvent reservoir. Pour additional toluene to fill the reservoir approximately $\frac{1}{2}$ full. Add Teflon boiling chips and assemble the apparatus. Adjust the heat source to cause the extractor to cycle three times per hour. Extract the sample for 16 hours. After extraction, allow the Soxhlet to cool. Transfer the toluene extract and three 10-ml rinses to the rotary evaporator. Concentrate the extract to approximately 10 ml. At this point the analyst may choose to split the sample in half. If so, split the sample, store one half for future use, and analyze the other according to the procedures in sections 3.4.5.2 and 3.4.5.3. In either case, use a nitrogen evaporative concentrator to reduce the volume of the sample being analyzed to near dryness. Dissolve the residue in 5 ml of hexane.

3.4.5.1.6 Container No. 3 (Toluene Rinse). Add 100 μ l of the Internal Standard solution (section 3.4.3.3.20) to the contents of the container. Concentrate the sample to a volume of about 1-5 ml using the rotary evaporator apparatus at a temperature of less than 37 °C. Rinse the sample container three times with small portions of toluene and add these to the concentrated solution and concentrate further to near dryness. Analyze the extract separately according to the procedures in sections 3.4.5.2 and 3.4.5.3, but concentrate the solution in a rotary evaporator apparatus rather than a nitrogen evaporative concentrator.

3.4.5.2 Sample Cleanup and Fractionation.

3.4.5.2.1 Silica Gel Column. Pack one end of a glass column, 20 mm \times 230 mm, with glass wool. Add in sequence, 1 g silica gel, 2 g of sodium hydroxide impregnated silica gel, 1 g silica gel, 4 g of acid-modified silica gel, and 1 g of silica gel. Wash the column with 30 ml of hexane and discard it. Add the sample extract, dissolved in 5 ml of hexane to the column with two additional 5-ml rinses. Elute the column with an additional 90 ml of hexane and retain the entire eluate. Concentrate this solution to a volume of about 1 ml using the nitrogen evaporative concentrator (section 3.4.2.3.8).

3.4.5.2.2 Basic Alumina Column. Shorten a 25-ml disposable Pasteur pipette to about 16 ml. Pack the lower section with glass wool and 12 g of basic alumina. Transfer the

concentrated extract from the silica gel column to the top of the basic alumina column and elute the column sequentially with 120 ml of 0.5 percent methylene chloride in hexane followed by 120 ml of 35 percent methylene chloride in hexane. Discard the first 120 ml of eluate. Collect the second 120 ml of eluate and concentrate it to about 0.5 ml using the nitrogen evaporative concentrator.

3.4.5.2.3 AX-21 Carbon/Celite 545

Column. Remove the bottom 0.5 in. from the tip of a 9-ml disposable Pasteur pipette. Insert a glass fiber filter disk in the top of the pipette 2.5 cm from the constriction. Add sufficient carbon/celite mixture to form a 2 cm column. Top with a glass wool plug. In some cases, AX-21 carbon fines may wash through the glass wool plug and enter the sample. This may be prevented by adding a celite plug to the exit end of the column. Rinse the column in sequence with 2 ml of 50 percent benzene in ethyl acetate, 1 ml of 50 percent methylene chloride in cyclohexane, and 2 ml of hexane. Discard these rinses. Transfer the concentrate in 1 ml of hexane from the basic alumina column to the carbon/celite column along with 1 ml of hexane rinse. Elute the column sequentially with 2 ml of 50 percent methylene chloride in hexane and 2 ml of 50 percent benzene in ethyl acetate and discard these eluates. Invert the column and elute in the reverse direction with 13 ml of toluene. Collect this eluate. Concentrate the eluate in a rotary evaporator at 50 °C to about 1 ml. Transfer the concentrate to a Reacti-vial using a toluene rinse and concentrate to a volume of 200 μ l using a stream of N₂. Store extracts at room temperature, shielded from light, until the analysis is performed.

3.4.5.3 Analysis. Analyze the sample with a gas chromatograph coupled to a mass spectrometer (GC/MS) using the instrumental parameters in sections 3.4.5.3.1 and 3.4.5.3.2. Immediately prior to analysis, add a 20- μ l aliquot of the Recovery Standard solution from Table 1 to each sample. A 2- μ l aliquot of the extract is injected into the GC. Sample extracts are first analyzed using the DB-5 capillary column to determine the concentration of each isomer of PCDDs and PCDFs (tetra- through octa-). If tetrachlorinated dibenzofurans are detected in this analysis, then analyze another aliquot of the sample in a separate run, using the DB-225 column to measure the 2,3,7,8-tetrachlorodibenzofuran isomer. Other column systems may be used, provided that the user is able to demonstrate, using calibration and performance checks, that the column system is able to meet the specifications of Section 3.4.6.1.2.2.

3.4.5.3.1 Gas Chromatograph Operating Conditions.

3.4.5.3.1.1 Injector. Configured for capillary column, splitless, 250 °C.

3.4.5.3.1.2 Carrier Gas. Helium, 1-2 ml/min.

3.4.5.3.1.3 Oven. Initially at 150 °C. Raise by at least 40 °C/min to 190 °C and then at 3 °C/min up to 300 °C.

3.4.5.3.2 High Resolution Mass Spectrometer.

3.4.5.3.2.1 Resolution. 10000 m/e.

3.4.5.3.2.2 Ionization Mode. Electron impact.

3.4.5.3.2.3 Source Temperature 250 °C.

3.4.5.3.2.4 Monitoring Mode. Selected ion monitoring. A list of the various ions to be

monitored is summarized in Table 3.4-2.

TABLE 3.4-2.—ELEMENTAL COMPOSITIONS AND EXACT MASSES OF THE IONS MONITORED BY HIGH RESOLUTIONS MASS SPECTROMETRY FOR PCDD'S AND PCDF'S

Descriptor no.	Accurate mass *	Ion type	Elemental composition	Analyte
1.....	[Not used]			
2.....	292.9825	LOCK	C ₇ F ₁₁	PFK
	303.9016	M	C ₁₂ H ₈ Cl ₄ O	TCDF
	305.8987	M+2	C ₁₂ H ₄ Cl ₂ O ₂	TCDF
	315.9419	M	¹³ C ₁₂ H ₈ Cl ₄ O	TCDF (S)
	317.9389	M+2	¹³ C ₁₂ H ₄ Cl ₃ O ₂	TCDF (S)
	319.8965	M	C ₁₂ H ₄ Cl ₂ O ₂	TCDD
	321.8938	M+2	C ₁₂ H ₄ Cl ₂ O ₂	TCDD
	327.8847	M	C ₁₂ H ₄ Cl ₂ O ₂	TCDD (S)
	330.9792	QC	C ₇ F ₁₃	PFK
	331.9368	M	¹³ C ₁₂ H ₄ Cl ₂ O ₂	TCDD (S)
	333.9339	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	TCDD (S)
	339.8597	M+2	C ₁₂ H ₄ Cl ₂ O ₂	PeCDF
	341.8587	M+4	C ₁₂ H ₄ Cl ₂ O ₂	PeCDF
	351.9000	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	PeCDF (S)
	353.8970	M+4	¹³ C ₁₂ H ₄ Cl ₂ O ₂	PeCDF (S)
	355.8548	M+2	C ₁₂ H ₄ Cl ₂ O ₂	PeCDD
	357.8518	M+4	C ₁₂ H ₄ Cl ₂ O ₂	PeCDD
	367.8949	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	PeCDD (S)
	369.8919	M+4	¹³ C ₁₂ H ₄ Cl ₂ O ₂	PeCDD (S)
	375.8364	M+2	C ₁₂ H ₄ Cl ₂ O ₂	HxCDFE
	409.7974	M+2	C ₁₂ H ₄ Cl ₂ O ₂	HxCDF
	373.8208	M+2	C ₁₂ H ₄ Cl ₂ O ₂	HxCDF
	375.8178	M+4	C ₁₂ H ₄ Cl ₂ O ₂	HxCDF
	383.8639	M	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDF (S)
	385.8610	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDF (S)
	389.8157	M+2	C ₁₂ H ₄ Cl ₂ O ₂	HxCDD
	391.8127	M+4	C ₁₂ H ₄ Cl ₂ O ₂	HxCDD
	392.9760	LOCK	C ₆ F ₁₆	PFK
	401.8559	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDD (S)
	403.8529	M+4	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDD (S)
	445.7555	M+4	C ₁₂ H ₄ Cl ₂ O ₂	OCDFE
	430.9729	QC	C ₆ F ₁₇	PFK
	407.7818	M+2	C ₁₂ H ₄ Cl ₂ O ₂	HxCDF
	409.7789	M+4	C ₁₂ H ₄ Cl ₂ O ₂	HxCDF
	417.8253	M	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDF (S)
	419.8220	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDF (S)
	423.7766	M+2	C ₁₂ H ₄ Cl ₂ O ₂	HxCDD
	425.7737	M+4	C ₁₂ H ₄ Cl ₂ O ₂	HxCDD
	435.8169	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDD (S)
	437.8140	M+4	¹³ C ₁₂ H ₄ Cl ₂ O ₂	HxCDD (S)
	479.7165	M+4	C ₁₂ H ₄ Cl ₂ O ₂	NCPDE
	430.9729	LOCK	C ₆ F ₁₇	PFK
	441.7428	M+2	C ₁₂ H ₄ Cl ₂ O ₂	OCDF
	443.7399	M+4	C ₁₂ H ₄ Cl ₂ O ₂	OCDF
	457.7377	M+2	C ₁₂ H ₄ Cl ₂ O ₂	OCDD
	459.7348	M+4	C ₁₂ H ₄ Cl ₂ O ₂	OCDD
	469.7779	M+2	¹³ C ₁₂ H ₄ Cl ₂ O ₂	OCDD (S)
	471.7750	M+4	¹³ C ₁₂ H ₄ Cl ₂ O ₂	OCDD (S)
	513.6775	M+4	C ₁₂ H ₄ Cl ₂ O ₂	DCDPE
	442.9728	QC	C ₁₀ F ₁₇	PFK

* The following nuclidic masses were used: H=1.007825, O=15.994915, C=12.000000, ³⁵Cl=34.988853, ³⁷Cl=33.003355, ³⁹Cl=36.965903, F=18.9984, S=Label Standard, QC=Ion selected for monitoring instrument stability during the GC/MS analysis.

TABLE 3.4-3.—ACCEPTABLE RANGES FOR ION-ABUNDANCE RATIOS OF PCDD'S AND PCDF'S

Number of Chlorine atoms	Ion type	Theoretical ratio	Control limits	
			Lower	Upper
4.....	M/M+2	0.77	0.65	0.89
5.....	M+2/M+4	1.55	1.32	1.78
6.....	M+2/M+4	1.24	1.05	1.43
6 ^a	M/M+2	0.51	0.43	0.59
7.....	M/M+2	0.44	0.37	0.51
7.....	M+2/M+4	1.04	0.88	1.20
8.....	M+2/M+4	0.89	0.76	1.02

^a Used only for ¹³C-HxCDF

^b Used only for ¹³C-HpCDF

3.4.5.3.2.5 Identification Criteria. The following identification criteria shall be used for the characterization of polychlorinated dibenzodioxins and dibenzofurans.

1. The integrated ion-abundance ratio ($M/M+2$ or $M+2/M+4$) shall be within 15 percent of the theoretical value. The acceptable ion-abundance ratio ranges for the identification of chlorine-containing compounds are given in Table 3.

2. The retention time for the analytes must be within 3 seconds of the corresponding ^{13}C -labeled internal standard, surrogate or alternate standard.

3. The monitored ions, shown in Table 3.4-2 for a given analyte, shall reach their maximum within 2 seconds of each other.

4. The identification of specific isomers that do not have corresponding ^{13}C -labeled standards is done by comparison of the relative retention time (RRT) of the analyte to the nearest internal standard retention time with reference (i.e., within 0.005 RRT units) to the comparable RRTs found in the continuing calibration.

5. The signal to noise ratio for all monitored ions must be greater than 2.5.

6. The confirmation of 2,3,7,8-TCDD and 2,3,7,8-TCDF shall satisfy all of the above identification criteria.

7. For the identification of PCDFs, no signal may be found in the corresponding PCDF channels.

3.4.5.3.2.6 Quantitation. The peak areas for the two ions monitored for each analyte are summed to yield the total response for each analyte. Each internal standard is used to quantitate the indigenous PCDDs or PCDFs in its homologous series. For example, the $^{13}\text{C}_{12}-2,3,7,8$ -tetrachlorodibenzodioxin is used to calculate the concentrations of all other tetrachlorinated isomers. Recoveries of the tetra- and penta-internal standards are calculated using the $^{13}\text{C}_{12}-1,2,3,4$ -TCDD. Recoveries of the hexa- through octa-internal standards are calculated using $^{13}\text{C}_{12}-1,2,3,7,8,9$ -HxCDD. Recoveries of the surrogate standards are calculated using the corresponding homolog from the internal standard.

3.4.6 Calibration

Same as Method 5 with the following additions.

3.4.6.1 GC/MS System.

3.4.6.1.1 Initial Calibration. Calibrate the GC/MS system using the set of five standards shown in Table 3.4-4. The relative standard deviation for the mean response factor from each of the unlabeled analytes (Table 4) and

of the internal, surrogate, and alternate standards shall be less than or equal to the values in Table 3.4-5. The signal to noise ratio for the GC signal present in every selected ion current profile shall be greater than or equal to 2.5. The ion abundance ratios shall be within the control limits in Table 3.4-3.

3.4.6.1.2 Daily Performance Check.

3.4.6.1.2.1 Calibration Check. Inject one μl of solution Number 3 from table 4. Calculate the relative response factor (RRF) for each compound and compare each RRF to the corresponding mean RRF obtained during the initial calibration. The analyzer performance is acceptable if the measured RRFs for the labeled and unlabeled compounds for the daily run are within the limits of the mean values shown in Table 3.4-5. In addition, the ion-abundance ratios shall be within the allowable control limits shown in Table 3.4-3.

3.4.6.1.2.2 Column Separation Check.

Inject a solution of a mixture of PCDDs and PCDFs that documents resolution between 2,3,7,8-TCDD and other TCDD isomers. Resolution is defined as a valley between peaks that is less than 25 percent of the lower of the two peaks. Identify and record the retention time windows for each homologous series.

TABLE 3.4-4.—COMPOSITION OF THE INITIAL CALIBRATION SOLUTIONS

Compound	Solution No.	Concentrations (pg/ μL)			
		1	2	3	4
<i>Unlabeled Analytes</i>					
2,3,7,8-TCDD		0.5	1	5	50
2,3,7,8-TCDF		0.5	1	5	50
1,2,3,7,8-PeCDD		2.5	5	25	250
1,2,3,7,8-PeCDF		2.5	5	25	250
2,3,4,7,8-PeCDF		2.5	5	25	250
1,2,3,4,7,8-HxCDD		2.5	5	25	250
1,2,3,6,7,8-HxCDD		2.5	5	25	250
1,2,3,7,8,9-HxCDD		2.5	5	25	250
1,2,3,4,7,8-HxCDF		2.5	5	25	250
1,2,3,6,7,8-HxCDF		2.5	5	25	250
1,2,3,7,8,9-HxCDF		2.5	5	25	250
2,3,4,6,7,8-HpCDD		2.5	5	25	250
1,2,3,4,6,7,8-HpCDF		2.5	5	25	250
1,2,3,4,7,8-HpCDF		2.5	5	25	250
OCDD		5.0	10	50	500
OCDF		5.0	10	50	500
<i>Internal Standards</i>					
$^{13}\text{C}_{12}-2,3,7,8$ -TCDD		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,7,8$ -PeCDD		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,6,7,8$ -HxCDD		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,4,6,7,8$ -HpCDD		100	100	100	100
$^{13}\text{C}_{12}$ -OCDD		200	200	200	200
$^{13}\text{C}_{12}-2,3,7,8$ -TCDF		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,7,8$ -PeCDF		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,6,7,8$ -HxCDF		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,4,6,7,8$ -HpCDF		100	100	100	100
<i>Surrogate Standards</i>					
$^{37}\text{Cl}-2,3,7,8$ -TCDD		0.5	1	5	50
$^{13}\text{C}_{12}-2,3,4,7,8$ -PeCDF		2.5	5	25	250
$^{13}\text{C}_{12}-1,2,3,4,7,8$ -HxCDD		2.5	5	25	250
$^{13}\text{C}_{12}-1,2,3,4,7,8$ -HxCDF		2.5	5	25	250
$^{13}\text{C}_{12}-1,2,3,4,7,8,9$ -HpCDF		2.5	5	25	250
<i>Alternative Standard</i>					
$^{13}\text{C}_{12}-1,2,3,7,8,9$ -HxCDF		2.5	5	25	250
<i>Recovery Standards</i>					
$^{13}\text{C}_{12}-1,2,3,4$ -TCDD		100	100	100	100
$^{13}\text{C}_{12}-1,2,3,7,8,9$ -HxCDD		100	100	100	100

TABLE 3.4-5.—MINIMUM REQUIREMENTS FOR INITIAL AND DAILY CALIBRATION RESPONSE FACTORS

Compound	Relative Response Factors	
	Initial Calibration RSD	Daily Calibration % Difference
<i>Unlabeled Analytes</i>		
2,3,7,8-TCDD.....	25	25
2,3,7,8-TCDF.....	25	25
1,2,3,7,8-PeCDD.....	25	25
1,2,3,7,8-PeCDF.....	25	25
2,3,4,7,8-PeCDF.....	25	25
1,2,4,5,7,8-HxCDD.....	25	25
1,2,3,6,7,8-HxCDD.....	25	25
1,2,3,7,8,9-HxCDD.....	25	25
1,2,3,4,7,8-HxCDF.....	25	25
1,2,3,6,7,8-HxCDF.....	25	25
1,2,3,7,8,9-HxCDF.....	25	25
2,3,4,6,7,8-HxCDF.....	25	25
1,2,3,4,6,7,8-HpCDD.....	25	25
1,2,3,4,6,7,8-HpCDF.....	25	25
OCDD.....	25	25
OCDF.....	30	30
<i>Internal Standards</i>		
¹³ C ₁₂ -2,3,7,8-TCDD.....	25	25
¹³ C ₁₂ -1,2,3,7,8-PeCDD.....	30	30
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD.....	25	25
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD.....	30	30
¹³ C ₁₂ -OCDD.....	30	30
¹³ C ₁₂ -2,3,7,8-TCDF.....	30	30
¹³ C ₁₂ -1,2,3,7,8-PeCDF.....	30	30
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF.....	30	30
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF.....	30	30
<i>Surrogate Standards</i>		
³ Cl ₄ -2,3,7,8-TCDD.....	25	25
¹³ C ₁₂ -2,3,4,7,8-PeCDF.....	25	25
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD.....	25	25
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF.....	25	25
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF.....	25	25
<i>Alternate Standard</i>		
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF.....	25	25

Perform a similar resolution check on the confirmation column to document the resolution between 2,3,7,8-TCDF and other TCDF isomers.

3.4.6.2 Lock Channels. Set mass spectrometer lock channels as specified in Table 3.4-3. Monitor the quality control check channels specified in Table 3.4-3 to verify instrument stability during the analysis.

3.4.7 Quality Control

3.4.7.1 Sampling Train Collection Efficiency Check. Add 100 μ l of the surrogate standards in Table 3.4-1 to the adsorbent cartridge of each train before collecting the field samples.

3.4.7.2 Internal Standard Percent Recoveries. A group of nine carbon-labeled PCDDs and PCDFs representing the tetra- through octachlorinated homologues, is added to every sample prior to extraction. The role of the internal standards is to quantitate the native PCDDs and PCDFs present in the sample as well as to determine the overall method efficiency. Recoveries of the internal standards must be between 40 to 130 percent for the tetra- through hexachlorinated compounds while the range is 25 to 130 percent for the higher hepta- and octachlorinated homologues.

3.4.7.3 Surrogate Recoveries. The five surrogate compounds in Table 3.4-4 are added to the resin in the adsorbent sampling cartridge before the sample is collected. The surrogate recoveries are measured relative to the internal standards and are a measure of collection efficiency. They are not used to measure native PCDDs and PCDFs. All recoveries shall be between 70 and 130 percent. Poor recoveries for all the surrogates may be an indication of breakthrough in the sampling train. If the recovery of all standards is below 70 percent, the sampling runs must be repeated. As an alternative, the sampling runs do not have to be repeated if the final results are divided by the fraction of surrogate recovery. Poor recoveries of isolated surrogate compounds should not be grounds for rejecting an entire set of samples.

3.4.7.4 Toluene QA Rinse. Report the results of the toluene QA rinse separately from the total sample catch. Do not add it to the total sample.

3.4.8 Quality Assurance

3.4.8.1 Applicability. When the method is used to analyze samples to demonstrate compliance with a source emission regulation, an audit sample must be analyzed, subject to availability.

3.4.8.2 Audit Procedure. Analyze an audit sample with each set of compliance samples. The audit sample contains tetra through octa isomers of PCDD and PCDF. Concurrently, analyze the audit sample and a set of compliance samples in the same manner to evaluate the technique of the analyst and the standards preparation. The same analyst, analytical reagents, and analytical system shall be used both for the compliance samples and the EPA audit sample.

3.4.8.3 Audit Sample Availability. Audit samples will be supplied only to enforcement agencies for compliance tests. The availability of audit samples may be obtained by writing Source Test Audit Coordinator (MD-77B), Quality Assurance Division, Atmospheric Research and Exposure Assessment Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, or by calling the Source Test Audit Coordinator (STAC) at (919) 541-7834. The request for the audit sample must be made at least 30 days prior to the scheduled compliance sample analysis.

3.4.8.4 Audit Results. Calculate the audit sample concentration according to the calculation procedure described in the audit instructions included with the audit sample. Fill in the audit sample concentration and the analyst's name on the audit response form included with the audit instructions. Send one copy to the EPA Regional Office or the appropriate enforcement agency and a

second copy to the STAC. The EPA Regional Office or the appropriate enforcement agency will report the results of the audit to the laboratory being audited. Include this response with the results of the compliance samples in relevant reports to the EPA Regional Office or the appropriate enforcement agency.

3.4.9 Calculations

Same as method 5, section 8 with the following additions.

3.4.9.1 Nomenclature.

A_{nl} =Integrated ion current of the noise at the retention time of the analyte.

A^{*}_{id} =Integrated ion current of the two ions characteristic of the internal standard i in the calibration standard.

A_{cl} =Integrated ion current of the two ions characteristic of compound i in the jth calibration standard.

A^{*}_{cl} =Integrated ion current of the two ions characteristic of the internal standard i in the jth calibration standard.

A_{cd} =Integrated ion current of the two ions characteristic of surrogate compound i in the calibration standard.

A_i =Integrated ion current of the two ions characteristic of compound i in the sample.

A^{*}_i =Integrated ion current of the two ions characteristic of internal standard i in the sample.

A_{rs} =Integrated ion current of the two ions characteristic of the recovery standard.

A_{sr} =Integrated ion current of the two ions characteristic of surrogate compound i in the sample.

C_i =Concentration of PCDD or PCDF i in the sample, pg/M³.

C_T =Total concentration of PCDDs or PCDFs in the sample, pg/M³.

m_{id} =Mass of compound i in the calibration standard injected into the analyzer, pg.

m^{*}_{id} =Mass of labeled compound i in the calibration standard injected into the analyzer, pg.

m^{*}_i =Mass of internal standard i added to the sample, pg.

m_{rs} =Mass of recovery standard in the calibration standard injected into the analyzer, pg.

m_{sr} =Mass of surrogate compound i in the calibration standard, pg.

RRF=Relative response factor.

RRF_{rs}=Recovery standard response factor.

RRF_{sr}=Surrogate compound response factor.

3.4.9.2 Average Relative Response Factor.

$$\text{RRF}_i = \frac{1}{n} \sum_{j=1}^n \left[\frac{A_{\text{cl}} m^{*}_{\text{id}}}{(A^{*}_{\text{cl}} m_{\text{id}})} \right] \quad \text{Eq. 23-1}$$

3.4.9.3 Concentration of the PCDDs and PCDFs.

$$C_i = m^{*}_i / (A^{*}_i \text{RRF}_i V_{\text{mdeg}}) \quad \text{Eq. 23-2}$$

3.4.9.4 Recovery Standard Response Factor.

$$\text{RRF}_{rs} = A^{*}_{\text{id}} m_{\text{rs}} / (A_{\text{rs}} m^{*}_{\text{id}}) \quad \text{Eq. 23-3}$$

3.4.9.5 Recovery of Internal Standards (R^{*}).

$$R^* = (A^{*}_i m_{\text{rs}} / A_{\text{rs}} R^{*}_{\text{rs}} m^{*}_{\text{id}}) \times 100\% \quad \text{Eq. 23-4}$$

3.4.9.6 Surrogate Compound Response Factor.

$$\text{RRFs} = A^{*}_{\text{id}} m_{\text{sr}} / (A_{\text{sr}} m^{*}_{\text{id}}) \quad \text{Eq. 23-5}$$

3.4.9.7 Recovery of Surrogate Compounds (R_s).

$$R_s = (A_{\text{sr}} m^{*}_{\text{id}} / A^{*}_{\text{id}} \text{RRF}_i m_{\text{id}}) \times 100\% \quad \text{Eq. 23-6}$$

3.4.9.8 Minimum Detectable Limit (MDL).

$$\text{MDL} = 2.5 A_{\text{nl}} m^{*}_{\text{id}} / (A^{*}_{\text{id}} \text{RRF}_i) \quad \text{Eq. 23-7}$$

3.4.9.9 Total Concentration of PCDDs and PCDFs in the Sample.

$$C_T = \sum_{i=1}^n C_i \quad \text{Eq. 23-8}$$

3.4.10 Bibliography

1. American Society of Mechanical Engineers. Sampling for the Determination of Chlorinated Organic Compounds in Stack Emissions. Prepared for U.S. Department of Energy and U.S. Environmental Protection Agency. Washington, DC December 1984. 25 p.

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3. Thompson, J.R. (ed.) Analysis of Pesticide Residues in Human and Environmental Samples. U.S. Environmental Protection Agency. Research Triangle Park, NC 1974.

4. Triangle Laboratories. Case Study: Analysis of Samples for the Presence of Tetra Through Octachloro-p-Dibenzodioxins and Dibenzofurans. Research Triangle Park, NC 1988. 26 p.

5. U.S. Environmental Protection Agency. Draft Method 8290—The Analysis of Polychlorinated Dibenz-p-dioxin and Polychlorinated Dibenzofurans by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry. In: Test Methods for Evaluating Solid Waste. Washington, DC SW-846.

3.5 Sampling for Aldehyde and Ketone Emissions from Stationary Sources (Method 0011)

3.5.1 Scope and Application

This method is applicable to the determination of Destruction and Removal Efficiency (DRE) of formaldehyde, CAS Registry number 50-00-0, and possibly other aldehydes and ketones from stationary sources as specified in the regulations. The methodology has been applied specifically to formaldehyde; however, many laboratories have extended the application to other aldehydes and ketones. Compounds

derivatized with 2,4-dinitrophenyl-hydrazine can be detected as low as 6.4×10^{-6} lbs/cu ft (1.8 ppbv) in stack gas over a 1 hr sampling period, sampling approximately 45 cu ft.

3.5.2 Summary of Method

3.5.2.1 Gaseous and particulate pollutants are withdrawn isokinetically from an emission source and are collected in aqueous acidic 2,4-dinitrophenyl-hydrazine.

Formaldehyde present in the emissions reacts

with the 2,4-dinitrophenyl-hydrazine to form the formaldehyde dinitrophenylhydrazone derivative. The dinitrophenylhydrazone derivative is extracted, solvent-exchanged, concentrated, and then analyzed by high performance liquid chromatography.

3.5.3 Interferences

3.5.3.1 A decomposition product of 2,4-dinitrophenyl-hydrazine, 2,4-dinitroaniline, can be an analytical interferant if concentrations are high. 2,4-Dinitroaniline can coelute with 2,4-dinitrophenylhydrazone of formaldehyde under high performance liquid chromatography conditions, which may be used for the analysis. High concentrations of highly-oxygenated compounds, especially acetone, that have the same retention time or nearly the same retention time as the dinitrophenylhydrazone of formaldehyde, and that also absorb at 360 nm, will interfere with the analysis.

Formaldehyde, acetone, and 2,4-dinitroaniline contamination of the aqueous acidic 2,4-dinitrophenyl-hydrazine (DNPH) reagent is frequently encountered. The reagent must be prepared within five days of use in the field and must be stored in an uncontaminated environment both before and after sampling in order to minimize blank problems. Some concentration of acetone contamination is unavoidable, because acetone is ubiquitous in laboratory and field operations. However, the acetone contamination must be minimized.

3.5.4 Apparatus and Materials

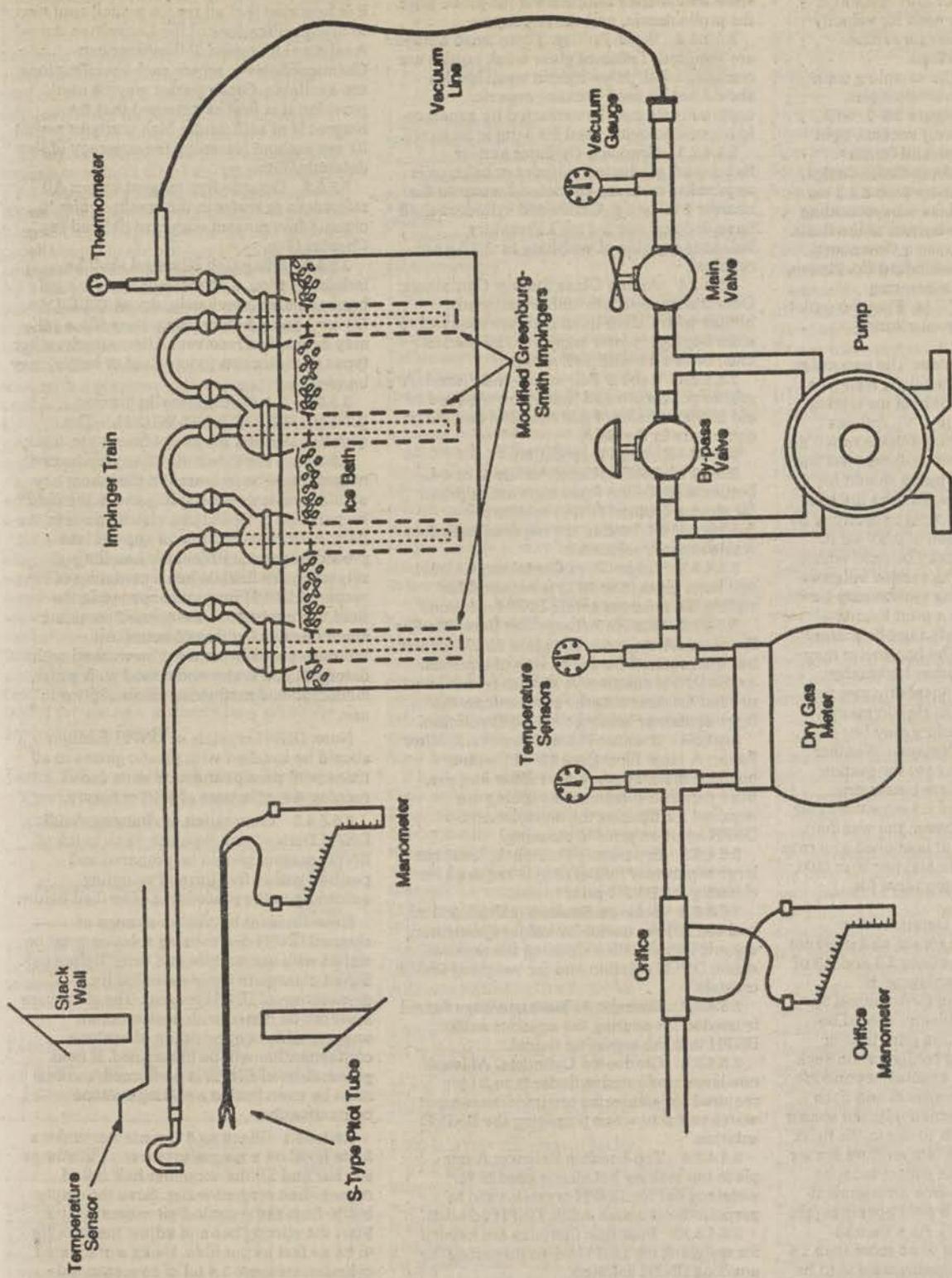
3.5.4.1 A schematic of the sampling train is shown in Figure 3.5-1. This sampling train configuration is adapted from EPA method 4 procedures. The sampling train consists of the following components: Probe Nozzle, Pitot Tube, Differential Pressure Gauge, Metering System, Barometer, and Gas Density Determination Equipment.

3.5.4.1.1 Probe Nozzle: Quartz or glass with sharp, tapered (30° angle) leading edge. The taper shall be on the outside to preserve a constant inner diameter. The nozzle shall be buttonhook or elbow design. A range of nozzle sizes suitable for isokinetic sampling should be available in increments of 0.15 cm (1/16 in), e.g., 0.32 to 1.27 cm (1/8 to 1/2 in), of larger if higher volume sampling trains are used. Each nozzle shall be calibrated according to the procedures outlined in section 3.5.8.1.

3.5.4.1.2 Probe Liner: Borosilicate glass or quartz shall be used for the probe liner. The liner should not allow the temperature in the probe to exceed $120 \pm 14^\circ \text{C}$ ($248 \pm 25^\circ \text{F}$).

3.5.4.1.3 Pitot Tube: The Pitot tube shall be Type S, as described in section 2.1 of EPA method 2, or any other appropriate device. The pitot tube shall be attached to the probe to allow constant monitoring of the stack gas velocity. The impact (high pressure) opening plane of the pitot tube shall be even with or above the nozzle entry plan (see EPA method 2, Figure 26b) during sampling. The Type S pitot tube assembly shall have a known coefficient, determined as outlined in section 4 of EPA method 2.

HSCRC/90



Formaldehyde Sampling Train

Figure 3.5-1

3.5.4.1.4 Differential Pressure Gauge: The differential pressure gauge shall be an inclined manometer or equivalent device as described in section 2.2 of EPA method 2. One manometer shall be used for velocity-head reading and the other for orifice-differential pressure readings.

3.5.4.1.5 Impingers: The sampling train requires a minimum of four impingers, connected as shown in Figure 3.5-1, with ground glass (or equivalent) vacuum-tight fittings. For the first, third, and fourth impingers, use the Greenburg-Smith design, modified by replacing the tip with a 1.3 cm inside diameter ($\frac{1}{2}$ in) glass tube extending to 1.3 cm ($\frac{1}{2}$ in) from the bottom of the flask. For the second impinger, use a Greenburg-Smith Impinger with the standard tip. Place a thermometer capable of measuring temperature to within 1 °C (2 °F) at the outlet of the fourth impinger for monitoring purposes.

3.5.4.1.6 Metering System: The necessary components are a vacuum gauge, leak-free pump, thermometers capable of measuring temperature within 3 °C (5.4 °F), dry-gas meter capable of measuring volume to within 1%, and related equipment as shown in Figure 3.5-1. At a minimum, the pump should be capable of 4 cfm free flow, and the dry gas meter should have a recording capacity of 0-999.9 cu ft with a resolution of 0.005 cu ft. Other metering systems may be used which are capable of maintaining sample volumes to within 2%. The metering system may be used in conjunction with a pitot tube to enable checks of isokinetic sampling rates.

3.5.4.1.7 Barometer: The barometer may be mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in Hg). In many cases, the barometric reading may be obtained from a nearby National Weather Service Station, in which case the station value (which is the absolute barometric pressure) is requested and an adjustment for elevation differences between the weather station and sampling point is applied at a rate of minus 2.5 mm Hg (0.1 in Hg) per 30 m (100 ft) elevation increases (vice versa for elevation decrease).

3.5.4.1.8 Gas Density Determination Equipment: Temperature sensor and pressure gauge (as described in sections 2.3 and 2.3 of EPA method 2), and gas analyzer, if necessary (as described in EPA method 3). The temperature sensor ideally should be permanently attached to the pitot tube or sampling probe in a fixed configuration such that the tip of the sensor extends beyond the leading edge of the probe sheath and does not touch any metal. Alternatively, the sensor may be attached just prior to use in the field. Note, however, that if the temperature sensor is attached in the field, the sensor must be placed in an interference-free arrangement with respect to the Type S pitot openings (see EPA method 2, Figure 2-7). As a second alternative, if a difference of no more than 1% in the average velocity measurement is to be introduced, the temperature gauge need not be attached to the probe or pitot tube.

3.5.4.2 Sample Recovery.

3.5.4.2.1 Probe Liner: Probe nozzle and brushes; Teflon bristle brushes with stainless steel wire handles are required. The probe

brush shall have extensions of stainless steel, Teflon, or inert material at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner, the probe nozzle, and the impingers.

3.5.4.2.2 Wash Bottles: Three wash bottles are required. Teflon or glass wash bottles are recommended; polyethylene wash bottles should not be used because organic contaminants may be extracted by exposure to organic solvents used for sample recovery.

3.5.4.2.3 Graduate Cylinder and/or Balance: A graduated cylinder or balance is required to measure condensed water to the nearest 1 ml or 1 g. Graduated cylinders shall have division not > 2 ml. Laboratory balances capable of weighing to ± 0.5 g are required.

3.5.4.2.4 Amber Glass Storage Containers: One-liter wide-mouth amber flint glass bottles with Teflon-lined caps are required to store impinger water samples. The bottles must be sealed with Teflon tape.

3.5.4.2.5 Rubber Policeman and Funnel: A rubber policeman and funnel are required to aid in the transfer of material into and out of containers in the field.

3.5.4.3 Reagent Preparation.

3.5.4.3.1 Bottles/Caps: Amber 1- or 4-L bottles with Teflon-lined caps are required for storing cleaned DNPH solution. Additional 4-L bottles are required to collect waste organic solvents.

3.5.4.3.2 Large Glass Container: At least one large glass (8 to 16 L) is required for mixing the aqueous acidic DNPH solution.

3.5.4.3.3 Stir Plate/Large Stir Bars/Stir Bar Retriever: A magnetic stir plate and large stir bar are required for the mixing of aqueous acidic DNPH solution. A stir bar retriever is needed for removing the stir bar from the large container holding the DNPH solution.

3.5.4.3.4 Buchner Filter/Filter Flask/Filter Paper: A large filter flask (2-4 L) with a buchner filter, appropriate rubber stopper, filter paper, and connecting tubing are required for filtering the aqueous acidic DNPH solution prior to cleaning.

3.5.4.3.5 Separatory Funnel: At least one large separatory funnel (2 L) is required for cleaning the DNPH prior to use.

3.5.4.3.6 Beakers: Beakers (150 ml, 250 ml, and 400 ml) are useful for holding/measuring organic liquids when cleaning the aqueous acidic DNPH solution and for weighing DNPH crystals.

3.5.4.3.7 Funnels: At least one large funnel is needed for pouring the aqueous acidic DNPH into the separator funnel.

3.5.4.3.8 Graduated Cylinders: At least one large graduated cylinder (1 to 2 L) is required for measuring organic-free reagent water and acid when preparing the DNPH solution.

3.5.4.3.9 Top-Loading Balance: A one-place top loading balance is needed for weighing out the DNPH crystals used to prepare the aqueous acidic DNPH solution.

3.5.4.3.10 Spatulas: Spatulas are needed for weighing out DNPH when preparing the aqueous DNPH solution.

3.5.4.4 Crushed Ice: Quantities ranging from 10-50 lb may be necessary during a sampling run, depending upon ambient temperature. Samples which have been taken must be stored and shipped cold; sufficient ice for this purpose must be allowed.

3.5.5 Reagents

3.5.5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

3.5.5.2 Organic-free reagent water: All references to water in this method refer to organic-free reagent water, as defined in Chapter One.

3.5.5.3 Silica Gel: Silica gel shall be indicating type, 6-16 mesh. If the silica gel has been used previously, dry at 175 °C (350 °F) for 2 hours before using. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used.

3.5.5.4 2,4-dinitrophenylhydrazine (DNPH), [2,4-(O₂N)₂C₆H₃]NHNH₂—The quantity of water may vary from 10 to 30%.

3.5.5.4.1 The 2,4-dinitrophenylhydrazine reagent must be prepared in the laboratory within five days of sampling use in the field. Preparation of DNPH can also be done in the field, with consideration of appropriate procedures required for safe handling of solvent in the field. When a container of prepared DNPH reagent is opened in the field, the contents of the opened container should be used within 48 hours. All laboratory glassware must be washed with detergent and water and rinsed with water, methanol, and methylene chloride prior to use.

Note: DNPH crystals or DNPH solution should be handled with plastic gloves at all times with prompt and extensive use of running water in case of skin exposure.

3.5.5.4.2 Preparation of Aqueous Acidic DNPH Derivatizing Reagent: Each batch of DNPH reagent should be prepared and purified within five days of sampling, according to the procedures described below.

Note: Reagent bottles for storage of cleaned DNPH derivatizing solution must be rinsed with acetonitrile and dried before use. Baked glassware is not essential for preparation of DNPH reagent. The glassware must not be rinsed with acetone or an unacceptable concentration of acetone contamination will be introduced. If field preparation of DNPH is performed, caution must be exercised in avoiding acetone contamination.

3.5.5.4.2.1 Place an 8 L container under a fume hood on a magnetic stirrer. Add a large stir bar and fill the container half full of organic-free reagent water. Save the empty bottle from the organic-free reagent water. Start the stirring bar and adjust the stir rate to be as fast as possible. Using a graduated cylinder, measure 1.4 ml of concentrated hydrochloric acid. Slowly pour the acid into the stirring water. Fumes may be generated and the water may become warm. Weight the DNPH crystals on a one-place balance (see Table 3.5-1 for approximate amounts) and add to the stirring acid solution. Fill the 8-L

container to the 8-L mark with organic-free reagent water and stir overnight. If all of the DNPH crystals have dissolved overnight, add additional DNPH and stir for two more hours. Continue the process of adding DNPH with additional stirring until a saturated solution has been formed. Filter the DNPH solution using vacuum filtration. Gravity filtration may be used, but a much longer time is required. Store the filtered solution in an amber bottle at room temperature.

3.5.5.4.2.2 Within five days of proposed use, place about 1.6 L of the DNPH reagent in a 2-L separatory funnel. Add approximately 200 ml of methylene chloride and stopper the funnel. Wrap the stopper of the funnel with paper towels to absorb any leakage. Invert and vent the funnel. Then shake vigorously for 3 minutes. Initially, the funnel should be vented frequently (every 10–15 sec). After the layers have separated, discard the lower (organic) layer.

3.5.5.4.2.3 Extract the DNPH a second time with methylene chloride and finally with cyclohexane. When the cyclohexane layer has separated from the DNPH reagent, the cyclohexane layer will be the top layer in the separatory funnel. Drain the lower layer (the cleaned extract DNPH reagent solution) into an amber bottle that has been rinsed with acetonitrile and allowed to dry.

3.5.5.4.3 Quality Control: Take two aliquots of the extracted DNPH reagent. The size of the aliquots is dependent upon the exact sampling procedure used, but 100 ml is reasonably representative. To ensure that the background in the reagent is acceptable for field use, analyze one aliquot of the reagent according to the procedure of method 8315. Save the other aliquot of aqueous acidic DNPH for use as a method blank when the analysis is performed.

TABLE 3.5-1.—APPROXIMATE AMOUNT OF CRYSTALLINE DNPH USED TO PREPARE A SATURATED SOLUTION

Amount of moisture in DNPH	Weight required per 8 L of solution
10 weight percent.....	31 g
15 weight percent.....	33 g
30 weight percent.....	40 g

TABLE 3.5-2.—INSTRUMENT DETECTION LIMITS AND REAGENT CAPACITY FOR FORMALDEHYDE ANALYSIS¹

Analyte	Detection limit, ppb ²	Reagent capacity, ppmv
Formaldehyde.....	1.8	66
Acetaldehyde.....	1.7	70
Acrolein.....	1.5	75
Acetone/ Propionaldehyde.....	1.5	75
Butyraldehyde.....	1.5	79
Methyl ethyl ketone.....	1.5	79
Valeraldehyde.....	1.5	84
Isovaleraldehyde.....	1.4	84
Hexaldehyde.....	1.3	88
Benzaldehyde.....	1.4	84

TABLE 3.5-2.—INSTRUMENT DETECTION LIMITS AND REAGENT CAPACITY FOR FORMALDEHYDE ANALYSIS¹—Continued

Analyte	Detection limit, ppb ²	Reagent capacity, ppmv
o-7m-/p-Tolualdehyde.....	1.3	89
Dimethylbenzaldehyde.....	1.2	93

¹ Oxygenated compounds in addition to formaldehyde are included for comparison with formaldehyde; extension of the methodology to other compounds is possible.

² Detection limits are determined in solvent. These values therefore represent the optimum capability of the methodology.

3.5.5.4.4 Shipment to the Field: Tightly cap the bottle containing extracted DNPH reagent using a Teflon-lined cap. Seal the bottle with Teflon tape. After the bottle is labeled, the bottle may be placed in a friction-top can (paint can or equivalent) containing a 1-2 inch layer of granulated charcoal and stored at ambient temperature until use.

3.5.5.4.4.1 If the DNPH reagent has passed the Quality Control criteria, the reagent may be packaged to meet necessary shipping requirements and sent to the sampling area. If the Quality Control criteria are not met, the reagent solution may be re-extracted or the solution may be re-prepared and the extraction sequence repeated.

3.5.5.4.4.2 If the DNPH reagent is not used in the field within five days of extraction, an aliquot may be taken and analyzed as described in method 0011A. If the reagent meets the Quality Control requirements, the reagent may be used. If the reagent does not meet the Quality Control requirements, the reagent must be discarded and new reagent must be prepared and tested.

3.5.5.4.5 Calculation of Acceptable Concentrations of Impurities in DNPH Reagent: The acceptable impurity concentration (AIC, µg/ml) is calculated from the expected analyte concentration in the sampled gas (EAC, ppbv), the volume of air that will be sampled at standard conditions (SVOL, L), the formula weight of the analyte (FW, g/mol), and the volume of DNPH reagent that will be used in the impingers (RVOL, ml):

$$AIC = 0.1 \times [EAC \times SVOL \times FW / 22.4 \times (FW + 180) / FW] \times (RVOL \times 1,000)$$

where:

0.1 is the acceptable contaminant concentration,

22.4 is a factor relating ppbv to g/L,
180 is a factor relating underivatized to derivatized analyte

1,000 is a unit conversion factor.

3.5.5.4.6 Disposal of Excess DNPH Reagent: Excess DNPH reagent may be returned to the laboratory and recycled or treated as aqueous waste for disposal purposes. 2,4-dinitrophenylhydrazine is a flammable solid when dry, so water should not be evaporated from the solution of the reagent.

3.5.5.5 Field Spike Standard Preparation: To prepare a formaldehyde field spiking standard at 4.01 mg/ml, use a 500 µl syringe to transfer 0.5 ml to 37% by weight of

formaldehyde (401 mg/ml) to a 50 ml volumetric flask containing approximately 50 ml of methanol. Dilute to 50 ml with methanol.

3.5.5.6 Hydrochloric Acid, HCl: Reagent grade hydrochloric acid (approximately 12N) is required for acidifying the aqueous DNPH solution.

3.5.5.7 Methylene Chloride, CH₂Cl₂: Methylene chloride (suitable for residue and pesticide analysis, GC/MS, HPLC, GC, Spectrophotometry or equivalent) is required for cleaning the aqueous acidic DNPH solution, rinsing glassware, and recovery of sample trains.

3.5.5.8 Cyclohexane, C₆H₁₂: Cyclohexane (HPLC grade) is required for cleaning the aqueous acidic DNPH solution.

NOTE: Do not use spectroanalyzed grades of cyclohexane if this sampling methodology is extended to aldehydes and ketones with four or more carbon atoms.

3.5.5.9 Methanol, CH₃OH: Methanol (HPLC grade or equivalent) is required for rinsing glassware.

3.5.5.10 Acetonitrile, CH₃CN: Acetonitrile (HPLC grade or equivalent) is required for rinsing glassware.

3.5.5.11 Formaldehyde, HCHO: Analytical grade or equivalent formaldehyde is required for preparation of standards. If other aldehydes or ketones are used, analytical grade or equivalent is required.

3.5.6 Sample Collection, Preservation, and Handling

3.5.6.1 Because of the complexity of this method, field personnel should be trained in and experienced with the test procedures in order to obtain reliable results.

3.5.6.2 Laboratory Preparation:

3.5.6.2.1 All the components shall be maintained and calibrated according to the procedure described in APTD-0576, unless otherwise specified.

3.5.6.2.2 Weigh several 200 to 300 g portions of silica gel in airtight containers to the nearest 0.5 g. Record on each container the total weight of the silica gel plus containers. As an alternative to preweighing the silica gel, it may instead be weighed directly in the impinger or sampling holder just prior to train assembly.

3.5.6.3 Preliminary Field Determinations:

3.5.6.3.1 Select the sampling site and the minimum number of sampling point according to EPA method 1 or other relevant criteria. Determine the stack pressure, temperature, and range of velocity heads using EPA method 2. A leak-check of the pilot lines according to EPA method 2, section 3.1, must be performed. Determine the stack gas moisture content using EPA Approximation method 4 or its alternatives to establish estimates of isokinetic sampling-rate settings. Determine the stack gas dry molecular weight, as described in EPA method 2, section 3.6. If integrated EPA method 3 sampling is used for molecular weight determination, the integrated bag sample shall be taken simultaneously with, and for the same total length of time as, the sample run.

3.5.6.3.2 Select a nozzle size based on the range of velocity heads so that is not

necessary to change the nozzle size in order to maintain isokinetic sampling rates below 28 L/min (1.0 cfm). During the run, do not change the nozzle. Ensure that the proper differential pressure gauge is chosen for the range of velocity heads encountered (see section 2.2 of EPA method 2).

3.5.6.3.3 Select a suitable probe liner and probe length so that all traverse points can be sampled. For large stacks, to reduce the length of the probe, consider sampling from opposite sides of the stack.

3.5.6.3.4 A minimum of 45 ft³ of sample volume is required for the determination of the Destruction and Removal Efficiency (DRE) of formaldehyde from incineration systems (45 ft³ is equivalent to one hour of sampling at 0.75 dscf). Additional sample volume shall be collected as necessitated by the capacity of the DNPH reagent and analytical detection limit constraints. To determine the minimum sample volume required, refer to sample calculations in section 10.

3.5.6.3.5 Determine the total length of sampling time needed to obtain the identified minimum volume by comparing the anticipated average sampling rate with the volume requirement. Allocate the same time to all traverse points defined by EPA method 1. To avoid timekeeping errors, the length of time sampled at each traverse point should be an integer or an integer plus 0.5 min.

3.5.6.3.6 In some circumstances (e.g., batch cycles) it may be necessary to sample for shorter times at the traverse points and to obtain smaller gas-volume samples. In these cases, careful documentation must be maintained in order to allow accurate calculation of concentrations.

3.5.6.4 Preparation of Collection Train:

3.5.6.4.1 During preparation and assembly of the sampling train, keep all openings where contamination can occur covered with Teflon film or aluminum foil until just prior to assembly or until sampling is about to begin.

3.5.6.4.2 Place 100 ml of cleaned DNPH solution in each of the first two impingers, and leave the third impinger empty. If additional capacity is required for high expected concentrations of formaldehyde in the stack gas, 200 ml of DNPH per impinger may be used or additional impingers may be used for sampling. Transfer approximately 200 to 300 g of pre-weighed silica gel from its container to the fourth impinger. Care should be taken to ensure that the silica gel is not entrained and carried out from the impinger during sampling. Place the silica gel container in a clean place or later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

3.5.6.4.3 With a glass or quartz liner, install the selected nozzle using a Viton-A O-ring with stack temperatures are < 260 °C (500 °F) and a woven glass-fiber gasket when temperatures are higher. See APTD-0576 (Rom, 1972) for details. Other connection systems utilizing either 316 stainless steel or Teflon ferrules may be used. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

3.5.6.4.4 Assemble the train as shown in Figure 3.5-1. During assembly, do not use any

silicone grease on ground-glass joints upstream of the impingers. Use Teflon tape, if required. A very light coating of silicone grease may be used on ground-glass joints downstream of the impingers, but the silicone grease should be limited to the outer portion (see APTD-0576) of the ground-glass joints to minimize silicone grease contamination. If necessary, Teflon tape may be used to seal leaks. Connect all temperature sensors to an appropriate potentiometer/display unit. Check all temperature sensors at ambient temperatures.

3.5.6.4.5 Place crushed ice all around the impingers.

3.5.6.4.6 Turn on and set the probe heating system at the desired operating temperature. Allow time for the temperature to stabilize.

3.5.6.5 Leak-Check Procedures:

3.5.6.5.1 Pre-test Leak Check:

3.5.6.5.1.1 After the sampling train has been assembled, turn on and set the probe heating system at the desired operating temperature. Allow time for the temperature to stabilize. If a Viton-A O-ring or other leak-free connection is used in assembling the probe nozzle to the probe liner, leak check the train at the sampling site by plugging the nozzle and pulling a 381 mm Hg (15 in Hg) vacuum.

Note: A lower vacuum may be used, provided that the lower vacuum is not exceeded during the test.

3.5.6.5.1.2 If an asbestos string is used, do not connect the probe to the train during the leak check. Instead, leak-check the train by first attaching a carbon-filled leak check impinger to the inlet and then plugging the Inlet and pulling a 381 mm Hg (15 in Hg) vacuum. (A lower vacuum may be used if this lower vacuum is not exceeded during the test.) Next connect the probe to the train and leak-check at about 25 mm Hg (1 in Hg) vacuum. Alternatively, leak-check the probe with the rest of the sampling train in one step at 381 mm Hg (15 in Hg) vacuum. Leakage rates in excess of (a) 4% of the average sampling rate or (b) >0.00057 m³/min (0.02 cfm), are unacceptable.

3.5.6.5.1.3 The following leak check instructions for the sampling train described in ADPT-0576 and APTD-0581 may be helpful. Start the pump with the fine-adjust valve fully open and coarse-valve completely closed. Partially open the coarse-adjust valve and slowly close the fine-adjust valve until the desired vacuum is reached. Do not reverse direction of the fine-adjust valve, as liquid will back up into the train. If the desired vacuum is exceeded, either perform the leak check at this higher vacuum or end the leak check, as shown below, and start over.

3.5.6.5.1.4 When the leak check is completed, first slowly remove the plug from the inlet to the probe. When the vacuum drops to 127 mm (5 in) Hg or less, immediately close the coarse-adjust valve. Switch off the pumping system and reopen the fine-adjust valve. Do not reopen the fine-adjust valve until the coarse-adjust valve has been closed to prevent the liquid in the impingers from being forced backward in the sampling line and silica gel from being entrained backward into the third impinger.

3.5.6.5.2 Leak Checks During Sampling Run:

3.5.6.5.2.1 If, during the sampling run, a component change (i.e., impinger) becomes necessary, a leak check shall be conducted immediately after the interruption of sampling and before the change is made. The leak check shall be done according to the procedure described in section 3.5.6.5.1, except that it shall be done at a vacuum greater than or equal to the maximum value recorded up to that point in the test. If the leakage rate is found to be no greater than 0.00057 m³/min (0.02 cfm or 4% of the average sampling rate (whichever is less), the results are acceptable. If a higher leakage rate is obtained, the tester must void the sampling run.

Note: Any correction of the sample volume by calculation reduces the integrity of the pollutant concentration data generated and must be avoided.

3.5.6.5.2.2 Immediately after a component change and before sampling is reinitiated, a leak check similar to a pre-test leak check must also be conducted.

3.5.6.5.3 Post-test Leak Check:

3.5.6.5.3.1 A leak check is mandatory at the conclusion of each sampling run. The leak check shall be done with the same procedures as the pre-test leak check, except that the post-test leak check shall be conducted at a vacuum greater than or equal to the maximum value reached during the sampling run. If the leakage rate is found to be no greater than 0.00057 m³/min (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable. If, however, a higher leakage rate is obtained, the tester shall record the leakage rate and void the sampling run.

3.5.6.6 Sampling Train Operation:

3.5.6.6.1 During the sampling run, maintain an isokinetic sampling rate to within 10% of true isokinetic, below 20 L/min (1.0 cfm). Maintain a temperature around the probe of 120 °C (248 °± 25 °F).

3.5.6.6.2 For each run, record the data on a data sheet such as the one shown in Figure 3.5-2. Be sure to record the initial dry-gas meter reading. Record the dry-gas meter readings at the beginning and end of each sampling time increment, when changes in flow rates are made, before and after each leak check, and when sampling is halted. Take other readings required by Figure 2 at least once at each sample point during each time increment and additional readings when significant adjustments 20% variation in velocity head readings) necessitate additional adjustments in flow rate. Level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse.

3.5.6.6.3 Clean the stack access ports prior to the test run to eliminate the change of sampling deposited material. To begin sampling, remove the nozzle cap, verify that the filter and probe heating systems are at the specified temperature, and verify that the pitot tube and probe are properly positioned. Position the nozzle at the first traverse point, with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions. Nomographs, which aid in the rapid

adjustment of the isokinetic sampling rate without excessive computations, are available. These nomographs are designed for use when the Type S pitot tube coefficient is 0.84 ± 0.02 and the stack gas equivalent

density (dry molecular weight) is equal to 29 ± 4 . APTD-0576 details the procedure for using the nomographs. If the stack gas molecular weight and the pitot tube coefficient are outside the above ranges, do

not use the nomographs unless appropriate steps are taken to compensate for the deviations.

BILLING CODE 6580-50-M

Plant		Schematic of Stack Cross Section
Location		
Operator		
Date		
Run No.		
Sample Box No.		
Mater Box No.		
Mater H@		
C Factor		
Pilot Tube Coefficient C _p		
Ambient Temperature		
Barometric Pressure		
Assumed Moisture %		
Probe Length, m(ft)		
Nozzle Identification No.		
Average Calibrated Nozzle Diameter, cm (in)		
Probe Heating Setting		
Leak Rate, m ³ /min. (cfm)		
Probe Liner Material		
Static Pressure, mm Hg (in. Hg)		
Filter No.		

Figure 3.5-2 Field Data Sheet

3.5.6.8.4 When the stack is under significant negative pressure (equivalent to the height of the impinger stem), take care to close the coarse-adjust valve before inserting the probe into the stack in order to prevent liquid from backing up through the train. If necessary, the pump may be turned on with the coarse-adjust valve closed.

3.5.6.8.5 When the probe is in position, block off the openings around the probe and stack access port to prevent unrepresentative dilution of the gas stream.

3.5.6.8.6 Traverse the stack cross section, as required by EPA Method 1, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or when removing or inserting the probe through the access port, in order to minimize the chance of extracting deposited material.

3.5.6.8.7 During the test run, make periodic adjustments to keep the temperature around the probe at the proper levels. Add more ice and, if necessary, salt, to maintain a temperature of $>20^{\circ}\text{C}$ (68°F) at the silica gel outlet. Also, periodically check the level and zero of the manometer.

3.5.6.8.8 A single train shall be used for the entire sampling run, except in cases where simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct, or in cases where equipment failure necessitates a change of trains. An additional train or additional trains may also be used for sampling when the capacity of a single train is exceeded.

3.5.6.8.9 When two or more trains are used, separate analyses of components from each train shall be performed. If multiple trains have been used because the capacity of a single train would be exceeded, first impingers from each train may be combined, and second impingers from each train may be combined.

3.5.6.8.10 At the end of the sampling run, turn off the coarse-adjust valve, remove the probe and nozzle from the stack, turn off the pump, record the final dry gas meter reading, and conduct a post-test leak check. Also, leak check the pitot lines as described in EPA method 2. The lines must pass this leak check in order to validate the velocity-head data.

3.5.6.8.11 Calculate percent isokineticity (see method 2) to determine whether the run was valid or another test should be made.

3.5.7 Sample Recovery

3.5.7.1 Preparation.

3.5.7.1.1 Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool. When the probe can be handled safely, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over the tip to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling because a vacuum will be created, drawing liquid from the impingers back through the sampling train.

3.5.7.1.2 Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet, being careful not to lose any condensate that might be present. Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used, let any condensed

water or liquid drain into the impingers. Cap off any open impinger inlets and outlets. Ground glass stoppers, Teflon caps or caps of other inert materials may be used to seal all openings.

3.5.7.1.3 Transfer the probe and impinger assembly to an area that is clean and protected from wind so that the chances of contaminating or losing the sample are minimized.

3.5.7.1.4 Inspect the train before and during disassembly, and note any abnormal conditions.

3.5.7.1.5 Save a portion of all washing solution (methylene chloride, water) used for cleanup as a blank. Transfer 200 ml of each solution directly from the wash bottle being used and place each in a separate, prelabeled sample container.

3.5.7.2 Sample Containers.

3.5.7.2.1 Container 1: Probe and Impinger Catches. Using a graduated cylinder, measure to the nearest ml, and record the volume of the solution in the first three impingers. Alternatively, the solution may be weighed to the nearest 0.5 g. Include any condensate in the probe in this determination. Transfer the impinger solution from the graduated cylinder into the amber flint glass bottle. Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, clean all surfaces to which the sample is exposed (including the probe nozzle, probe fitting, probe liner, first impinger, and impinger connector) with methylene chloride. Use less than 500 ml for the entire wash (250 ml would be better, if possible). Add the washing to the sample container.

3.5.7.2.1.1 Carefully remove the probe nozzle and rinse the inside surface with methylene chloride from a wash bottle. Brush with a Teflon bristle brush, and rinse until the rinse shows no visible particles or yellow color, after which make a final rinse of the inside surface. Brush and rinse the inside parts of the Swagelok fitting with methylene chloride in a similar way.

3.5.7.2.1.2 Rinse the probe liner with methylene chloride. While squirting the methylene chloride into the upper end of the probe, tilt and rotate the probe so that all inside surfaces will be wetted with methylene chloride. Let the methylene chloride drain from the lower end into the sample container. The tester may use a funnel (glass or polyethylene) to aid in transferring the liquid washes to the container. Follow the rinse with a Teflon brush. Hold the probe in an inclined position, and squirt methylene chloride into the upper end as the probe brush is being pushed with a twisting action through the probe. Hold the sample container underneath the lower end of the probe, and catch any methylene chloride, water, and particulate matter that is brushed from the probe. Run the brush through the probe three times or more. With stainless steel or other metal probes, run the brush through in the above prescribed manner at least six times since there may be small crevices in which particulate matter can be entrapped. Rinse the brush with methylene chloride or water, and quantitatively collect these washings in the sample container. After the brushing, make a final rinse of the probe as described above.

Note: Two people should clean the probe in order to minimize sample losses. Between sampling runs, brushes must be kept clean and free from contamination.

3.5.7.2.1.3 Rinse the inside surface of each of the first three impingers (and connecting tubing) three separate times. Use a small portion of methylene chloride for each rinse, and brush each surface to which the sample is exposed with a Teflon bristle brush to ensure recovery of fine particulate matter. Water will be required for the recovery of the impingers in addition to the specified quantity of methylene chloride. There will be at least two phases in the impingers. This two-phase mixture does not pour well, and a significant amount of the impinger catch will be left on the walls. The use of water as a rinse makes the recovery quantitative. Make a final rinse of each surface and of the brush, using both methylene chloride and water.

3.5.7.2.1.4 After all methylene chloride and water washing and particulate matter have been collected in the sample container, tighten the lid so the solvent, water, and DNPH reagent will not leak out when the container is shipped to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Seal the container with Teflon tape. Label the container clearly to identify its contents.

3.5.7.2.1.5 If the first two impingers are to be analyzed separately to check for breakthrough, separate the contents and rinses of the two impingers into individual containers. Care must be taken to avoid physical carryover from the first impinger to the second. The formaldehyde hydrazone is a solid which floats and froths on top of the impinger solution. Any physical carryover of collected moisture into the second impinger will invalidate a breakthrough assessment.

3.5.7.2.2 Container 2: Sample Blank. Prepare a blank by using an amber flint glass container and adding a volume of DNPH reagent and methylene chloride equal to the total volume in Container 1. Process the blank in the same manner as Container 1.

3.5.7.2.3 Container 3: Silica Gel. Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. The impinger containing the silica gel may be used as a sample transport container with both ends sealed with tightly fitting caps or plugs. Ground-glass stoppers or Teflon caps may be used. The silica gel impinger should then be labeled, covered with aluminum foil, and packaged on ice for transport to the laboratory. If the silica gel is removed from the impinger, the tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere to the impinger wall and are difficult to remove. Since the gain in weight is to be used for moisture calculations, do not use water or other liquids to transfer the silica gel. If a balance is available in the field, the spent silica gel (or silica gel plus impinger) may be weighed to the nearest 0.5 g.

3.5.7.2.4 Sample containers should be placed in a cooler, cooled by (although not in contact with) ice. Sample containers must be

placed vertically and, since they are glass, protected from breakage during shipment. Samples should be cooled during shipment so they will be received cold at the laboratory.

3.5.8 Calibration

3.5.8.1 Probe Nozzle: Probe nozzles shall be calibrated before their initial use in the field. Using a micrometer, measure the inside diameter of the nozzle to the nearest 0.025 mm (0.001 in). Make measurements at three separate places across the diameter and obtain the average of the measurements. The difference between the high and low numbers shall not exceed 0.1 mm (0.004 in). When the nozzles become nicked or corroded, they shall be replaced and calibrated before use. Each nozzle must be permanently and uniquely identified.

3.5.8.2 Pitot Tube: The Type S pitot tube assembly shall be calibrated according to the procedure outlined in Section 4 of EPA Method 2 or assigned a nominal coefficient of 0.84 if it is not visibly nicked or corroded and if it meets design and intercomponent spacing specifications.

3.5.8.3 Metering System.

3.5.8.3.1 Before its initial use in the field, the metering system shall be calibrated according to the procedure outlined in APTD-0576. Instead of physically adjusting the dry-gas meter dial readings to correspond to the wet-test meter readings, calibration factors may be used to correct the gas meter dial readings mathematically to the proper values. Before calibrating the metering system, it is suggested that a leak check be conducted. For metering systems having diaphragm pumps, the normal leak check procedure will not detect leakages with the pump. For these cases, the following leak check procedure will apply: make a ten-minute calibration run at 0.00057 m³/min (0.02 cfm). At the end of the run, take the difference of the measured wettest and dry-gas meter volumes and divide the difference by 10 to get the leak rate. The leak rate should not exceed 0.00057 m³/min (0.02 cfm).

3.5.8.3.2 After each field use, check the calibration of the metering system by performing three calibration runs at a single intermediate orifice setting (based on the previous field test). Set the vacuum at the maximum value reached during the test series. To adjust the vacuum, insert a valve between the wet-test meter and the inlet of the metering system. Calculate the average value of the calibration factor. If the calibration has changed by more than 5%, recalibrate the meter over the full range of orifice settings, as outlined in APTD-0576.

3.5.8.3.3 Leak check of metering system: The portion of the sampling train from the pump to the orifice meter (see Figure 1) should be leak checked prior to initial use and after each shipment. Leakage after the pump will result in less volume being recorded than is actually sampled. Use the following procedure: Close the main valve on the meter box. Insert a one-hole rubber stopper with rubber tubing attached into the orifice exhaust pipe. Disconnect and vent the low side of the orifice manometer. Close off the low side orifice tap. Pressurize the system to 13–18 cm (5–7 in) water column by blowing into the rubber tubing. Pinch off the tubing and observe the manometer for 1 min. A loss

of pressure on the manometer indicates a leak in the meter box. Leaks must be corrected.

Note: If the dry-gas-meter coefficient values obtained before and after a test series differ by >5%, either the test series must be voided or calculations for test series must be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

3.5.8.4 Probe Heater: The probe heating system must be calibrated before its initial use in the field according to the procedure outlined in APTD-0576. Probes constructed according to APTD-0581 need not be calibrated if the calibration curves in APTD-0576 are used.

3.5.8.5 Temperature gauges: Each thermocouple must be permanently and uniquely marked on the casting. All mercury-in-glass reference thermometers must conform to ASTM E-1 63C or 63F specifications. Thermocouples should be calibrated in the laboratory with and without the use of extension leads. If extension leads are used in the field, the thermocouple readings at the ambient air temperatures, with and without the extension lead, must be noted and recorded. Correction is necessary if the use of an extension lead produces a change >1.5%.

3.5.8.5.1 Impinger and dry-gas meter thermocouples: For the thermocouples used to measure the temperature of the gas leaving the impinger train, three-point calibration at ice water, room air, and boiling water temperatures is necessary. Accept the thermocouples only if the readings at all three temperatures agree to $\pm 2^{\circ}\text{C}$ (3.60°F) with those of the absolute value of the reference thermometer.

3.5.8.5.2 Probe and stack thermocouple: For the thermocouples used to indicate the probe and stack temperatures, a three-point calibration at ice water, boiling water, and hot oil bath temperatures must be performed. Use of a point at room air temperature is recommended. The thermometer and thermocouple must agree to within 1.5% at each of the calibration points. A calibration curve (equation) may be constructed (calculated) and the data extrapolated to cover the entire temperature range suggested by the manufacturer.

3.5.8.6 Barometer: Adjust the barometer initially and before each test series to agree to within ± 2.5 mm Hg (0.1 in Hg) of the mercury barometer or the correct barometric pressure value reported by a nearby National Weather Service Station (same altitude above sea level).

3.5.8.7 Triple-beam balance: Calibrate the triple-beam balance before each test series, using Class S standard weights. The weights must be within $\pm 0.5\%$ of the standards, or the balance must be adjusted to meet these limits.

3.5.9 Calculations

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after final calculations.

3.5.9.1 Calculation of Total Formaldehyde: To determine the total formaldehyde in mg, use the following equation:

$$\text{Total mg formaldehyde} = C_d \times V \times DF \times \frac{[\text{g/mole aldehyde}]}{[\text{g/mole DNPH derivative}]} \times 10^3 \frac{\text{mg}}{\mu\text{g}}$$

where:

C_d =measured concentration of DNPH-formaldehyde derivative, $\mu\text{g}/\text{ml}$.
 V =organic extract volume ml.
 DF =dilution factor.

3.5.9.2 Formaldehyde concentration in stack gas.

Determine the formaldehyde concentration in the stack gas using the following equation: $C_f = K [\text{total formaldehyde, mg}] V_{m(\text{std})}$

where:

$K = 35.31 \text{ ft}^3/\text{m}^3$ if $V_{m(\text{std})}$ is expressed in English units
 $= 1.00 \text{ m}^3/\text{m}^3$ if $V_{m(\text{std})}$ is expressed in metric units.
 $V_{m(\text{std})}$ volume of gas sample a measured by dry gas meter, corrected to standard conditions, dscm (dscf).

3.5.9.3 Average Dry Gas Meter Temperature and Average Orifice Pressure Drop are obtained from the data sheet.

3.5.9.4 Dry Gas Volume: Calculate $V_{m(\text{std})}$ and adjust for leakage, if necessary, using the equation in section 6.3 of EPA method 5.

3.5.9.5 Volume of Water Vapor and Moisture Content: Calculate the volume of water vapor and moisture content from equations 5-2 and 5-3 of EPA method 5.

3.5.10 Determination of Volume to be Sampled

To determine the minimum sample volume to be collected, use the following sequence of equations.

3.5.10.1 From prior analysis of the waste feed, the concentration of formaldehyde (FORM) introduced into the combustion system can be calculated. The degree of destruction and removal efficiency that is required is used to determine the amount of FORM allowed to be present in the effluent. This amount may be expressed as:

$$\text{Max FORM Mass} = [(\text{WF})(\text{FORM conc})] (100 - \% \text{DRE})]/100$$

where:

WF =mass flow rate of waste feed per h, g/h (lb/h).

FORM =concentration of FORM (wt %) introduced into the combustion process.

DRE =percent Destruction and Removal Efficiency required.

$\text{Max FORM} = \text{mass flow rate (g/h [lb/j]) of FORM emitted from the combustion sources.}$

3.5.10.2 The average discharge concentration of the FORM in the effluent gas is determined by comparing the Max FORM with the volumetric flow rate being exhausted from the source. Volumetric flow rate data are available as a result of preliminary EPA method 1–4 determinations:

$$\text{Max FORM conc} = [\text{Max FORM Mass}] / DV_{eff(\text{std})}$$

where:

$DV_{eff(\text{std})}$ =volumetric flow rate of exhaust gas, dscm (dscf).

FORM conc = anticipated concentration of the FORM in the exhaust gas stream, g/dscm (lb/dscf).

3.5.10.3 In making this calculation, it is recommended that a safety margin of at least ten be included.

$$[\text{LDL}_{\text{FORM}} \times 10 / \text{FORM conc}] V_{\text{tbc}}$$

where:

LDL_{FORM} = detectable amount of FORM in entire sampling train.

V_{tbc} = minimum dry standard volume to be collected at dry-gas meter.

3.5.10.4 The following analytical detection limits and DNPH Reagent Capacity (based on a total volume of 200 ml in two impingers) must also be considered in determining a volume to be sampled.

3.5.11 Quality Control

3.5.11.1 Sampling: See EPA Manual 600/4-77-02b for Method 5 quality control.

3.5.11.2 Analysis: The quality assurance program required for this method includes the analysis of the field and method blanks, procedure validations, and analysis of field spikes. The assessment of combustion data and positive identification and quantitation of formaldehyde are dependent on the integrity of the samples received and the precision and accuracy of the analytical methodology. Quality assurance procedures for this method are designed to monitor the performance of the analytical methodology and to provide the required information to take corrective action if problems are observed in laboratory operations or in field sampling activities.

3.5.11.2.1 Field Blanks: Field blanks must be submitted with the samples collected at each sampling site. The field blanks include the sample bottles containing aliquots of sample recovery solvents, methylene chloride and water, and unused DNPH reagent. At a minimum, one complete sampling train will be assembled in the field staging area, taken to the sampling area, and leak-checked at the beginning and end of the testing (or for the same total number of times as the actual sampling train). The probe of the blank train must be heated during the sample test. The train will be recovered as if it were an actual test sample. No gaseous sample will be passed through the blank sampling train.

3.5.11.2.2 Method Blanks: A method blank must be prepared for each set of analytical operations, to evaluate contamination and artifacts that can be derived from glassware, reagents, and sample handling in the laboratory.

3.5.11.2.3 Field Spike: A field spike is performed by introducing 200 μL of the Field Spike Standard into an impinger containing 200 ml of DNPH solution. Standard impinger recovery procedures are followed and the spike is used as a check on field handling and recovery procedures. An aliquot of the field spike standard is retained in the laboratory for derivatization and comparative analysis.

3.5.12 Method Performance

3.5.12.1 Method performance evaluation: The expected method performance parameters for precision, accuracy, and detection limits are provided in Table 3.5-3.

Addition of a Filter to the Formaldehyde Sampling Train

As a check on the survival of particulate material through the impinger system, a filter can be added to the impinger train either after the second impinger or after the third impinger. Since the impingers are in an ice bath, there is no reason to heat the filter at this point.

Any suitable medium (e.g., paper, organic membrane) may be used for the filter if the material conforms to the following specifications:

(1) the filter has at least 95% collection efficiency (<5% penetration) for 3 μm diethyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM standard method D2986-71. Test data from the supplier's quality control program are sufficient for this purpose.

(2) the filter has a low aldehyde blank value (<0.015 mg formaldehyde/cm² of filter area). Before the test series, determine the average formaldehyde blank value of at least three filters (from the lot to be used for sampling) using the applicable analytical procedures.

TABLE 3.5-3.—EXPECTED METHOD PERFORMANCE FOR FORMALDEHYDE

Parameter	Precision ¹	Accuracy ²	Detection limits ³
Matrix: Dual trains.	$\pm 15\%$ RPD	$\pm 20\%$	1.5×10^{-7} lb/ft ³ (1.8 ppbv).

¹ Relative percent difference limit for dual trains.

² Limit for field spike recoveries.

³ The lower reporting limit having less than 1% probability of false positive detection.

Recover the exposed filter into a separate clean container and return the container over ice to the laboratory for analysis. If the filter is being analyzed for formaldehyde, the filter may be recovered into a container or DNPH reagent for shipment back to the laboratory. If the filter is being examined for the presence of particulate material, the filter may be recovered into a clean dry container and returned to the laboratory.

3.6 Analysis for Aldehydes and Ketones by High Performance Liquid Chromatography (HPLC) (Method 0011A)

3.6.1 Scope and Application

3.6.1.1 Method 0011A covers the determination of free formaldehyde in the aqueous samples and leachates and derived aldehydes/ketones collected by method 0011.

Compound name	CAS No. ¹
Formaldehyde	50-00-0
Acetaldehyde	75-07-0

¹ Chemical Abstract Services Registry Number

3.6.1.2 Method 0011A is a high performance liquid chromatographic (HPLC) method optimized for the determination of formaldehyde and acetaldehyde in aqueous environmental matrices and leachates of solid samples and stack samples collected by

method 0011. When this method is used to analyze unfamiliar sample matrices, compound identification should be supported by at least one additional qualitative technique. A gas chromatograph/mass spectrometer (GC/MS) may be used for the qualitative confirmation of results from the target analytes, using the extract produced by this method.

3.6.1.3 The method detection limits (MDL) are listed in Tables 3.6-1 and 3.6-2. The MDL for a specific sample may differ from that listed, depending upon the nature of interferences in the sample matrix and the amount of sample used in the procedure.

3.6.1.4 The extraction procedure for solid samples is similar to that specified in method 1311 (1). Thus, a single sample may be extracted to measure the analytes included in the scope of other appropriate methods. The analyst is allowed the flexibility to select chromatographic conditions appropriate for the simultaneous measurement of contaminations of these analytes.

TABLE 3.6-1.—HIGH PERFORMANCE LIQUID CHROMATOGRAPHY CONDITIONS AND METHOD DETECTION LIMITS USING SOLID SORBENT EXTRACTION

Analyte	Retention time (minutes)	MDL ($\mu\text{g}/\text{L}$) ¹
Formaldehyde	7.1	7.2

HPLC conditions: Reverse phase C18 column, 4.6 \times 250 mm; isocratic elution using methanol/water (75:25, v/v); flow rate 1.0 mL/min.; detector 360 nm.

¹ After correction for laboratory blank.

TABLE 3.6-2.—HIGH PERFORMANCE LIQUID CHROMATOGRAPHY CONDITIONS AND METHOD DETECTION LIMITS USING METHYLENE CHLORIDE EXTRACTION

Analyte	Retention time (minutes)	MDL ($\mu\text{g}/\text{L}$) ¹
Formaldehyde	7.1	7.2
Acetaldehyde	8.6	171 ¹

HPLC conditions: Reverse phase C18 column, 4.6 \times 250 mm; isocratic elution using methanol/water (75:25, v/v); flow rate 1.0 mL/min.; detector 360 nm.

¹ These values include reagent blank concentrations of approximately 13 $\mu\text{g}/\text{L}$ formaldehyde and 130 $\mu\text{g}/\text{L}$ acetaldehyde.

3.6.1.5 This method is restricted to use by, or under the supervision of analysts experienced in the use of chromatography and in the interpretation of chromatograms. Each analyst must demonstrate the ability to generate acceptable results with this method.

3.6.1.6 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. The laboratory is responsible for maintaining a current

awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A reference file of material safety data sheets should also be made available to all personnel involved in the chemical analysis. Additional references to laboratory safety are available.

3.6.1.7 Formaldehyde has been tentatively classified as a known or suspected, human or mammalian carcinogen.

3.6.2 Summary of Method

3.6.2.1 Environmental Liquids and Solid Leachates.

3.6.2.1.1 For wastes comprised of solids or for aqueous wastes containing significant amounts of solid material, the aqueous phase, if any, is separated from the solid phase and stored for later analysis. If necessary, the particle size of the solids in the waste is reduced. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase of the waste. A special extractor vessel is used when testing for volatiles. Following extraction, the aqueous extract is separated from the solid phase by filtration employing 0.6 to 0.8 μm glass fiber filters.

3.6.2.1.2 If compatible (i.e., multiple phases will not form on combination), the initial aqueous phase of the waste is added to the aqueous extract, and these liquids are analyzed together. If incompatible, the liquids are analyzed separately and the results are mathematically combined to yield a volume weighted average concentration.

3.6.2.1.3 A measured volume of aqueous sample or an appropriate amount of solids leachate is buffered to pH 5 and derivatized with 2,4-dinitrophenylhydrazine (DNPH), using either the solid sorbent or the methylene derivatization/extraction option. If the solid sorbent option is used, the derivative is extracted using solid sorbent cartridges, followed by elution with ethanol. If the methylene chloride option is used, the derivative is extracted with methylene chloride. The methylene chloride extracts are concentrated using the Kuderna-Danish (K-D) procedure and solvent exchanged into methanol prior to HPLC analysis. Liquid chromatographic conditions are described which permit the separation and measurement of formaldehyde in the extract by absorbance detection at 360 nm.

3.6.2.2 Stack Gas Samples Collected by Method 0011.

3.6.2.2.1 The entire sample returned to the laboratory is extracted with methylene chloride and the methylene chloride extract is brought up to a known volume. An aliquot of the methylene chloride extract is solvent exchanged and concentrated or diluted as necessary.

3.6.2.2.2 Liquid chromatographic conditions are described that permit the separation and measurement of formaldehyde in the extract by absorbance detection at 360 nm.

3.6.3 Interferences

3.6.3.1 Method interferences may be caused by contaminants in solvents, reagents, glassware, and other sample processing hardware that lead to discrete artifacts and/or elevated baselines in the chromatograms. All of these materials must be routinely

demonstrated to be free from interferences under the conditions of the analysis by analyzing laboratory reagent blanks.

3.6.3.1.1 Glassware must be scrupulously cleaned. Clean all glassware as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing with hot water, and rinses with tap water and distilled water. It should then be drained, dried, and heated in a laboratory oven at 130°C for several hours before use. Solvent rinses with methanol may be substituted for the oven heating. After drying and cooling, glassware should be stored in a clean environment to prevent any accumulation of dust or other contaminants.

3.6.3.1.2 The use of high purity reagents and solvents helps to minimize interference problems. Purification of solvents by distillation in all-glass systems may be required.

3.6.3.2 Analysis for formaldehyde is especially complicated by its ubiquitous occurrence in the environment.

3.6.3.3 Matrix interferences may be caused by contaminants that are coextracted from the sample. The extent of matrix interferences will vary considerably from source to source, depending upon the nature and diversity of the matrix being sampled. No interferences have been observed in the matrices studied as a result of using solid sorbent extraction as opposed to liquid extraction. If interferences occur in subsequent samples, some additional cleanup may be necessary.

3.6.3.4 The extent of interferences that may be encountered using liquid chromatographic techniques has not been fully assessed. Although the HPLC conditions described allow for a resolution of the specific compounds covered by this method, other matrix components may interfere.

3.6.4 Apparatus and Materials

3.6.4.1 Reaction vessel—250 ml Florence flask.

3.6.4.2 Separatory funnel—205 ml, with Teflon stopcock.

3.6.4.3 Kuderna-Danish (K-D) apparatus.

3.6.4.3.1 Concentrator tube—10 ml graduated (Kontes K-570050-1025 or equivalent). A ground glass stopper is used to prevent evaporation of extracts.

3.6.4.3.2 Evaporation flask—500 ml (Kontes K-570001-500 or equivalent). Attach to concentrator tube with springs, clamps, or equivalent.

3.6.4.3.3 Snyder column—Three ball macro (Kontes K-503000-0121 or equivalent).

3.6.4.3.4 Snyder column—Two ball macro (Kontes K-569001-0219 or equivalent).

3.6.4.3.5 Springs— $\frac{1}{2}$ inch (Kontes K-662750 or equivalent).

3.6.4.4 Vials—10, 25 ml, glass with Teflon lined screw caps or crimp tops.

3.6.4.5 Boiling chips—Solvent extracted with methylene chloride, approximately 10/40 mesh (silicon carbide or equivalent).

3.6.4.6 Balance—Analytical, capable of accurately weighing to the nearest 0.0001 g.

3.6.4.7 pH meter—Capable of measuring to the nearest 0.01 units.

3.6.4.8 High performance liquid chromatograph (modular).

3.6.4.8.1 Pumping system—Isocratic, with constant flow control capable of 1.00 ml/min.

3.6.4.8.2 High pressure injection valve with 20 μl loop.

3.6.4.8.3 Column—250 mm \times 4.6 mm ID, 5 μm particle size, C18 (or equivalent).

3.6.4.8.4 Absorbance detector—360 nm.

3.6.4.8.5 Strip-chart recorder compatible with detector—Use of a data system for measuring peak areas and retention times is recommended.

3.6.4.9 Glass fiber filter paper.

3.6.4.10 Solid sorbent cartridges—Packed with 500 mg C18 (Baker or equivalent).

3.6.4.11 Vacuum manifold—Capable of simultaneous extraction of up to 12 samples (Supelco or equivalent).

3.6.4.12 Sample reservoirs—60 ml capacity (Supelco or equivalent).

3.6.4.13 Pipet—Capable of accurately delivering 0.10 ml solution (Pipetman or equivalent).

3.6.4.14 Water bath—Heated, with concentric ring cover, capable of temperature control ($(\pm 2^\circ\text{C})$. The bath should be used under a hood.

3.6.4.15 Volumetric Flasks—250 or 500 ml.

3.6.5 Reagents

3.6.5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

3.6.5.2 Organic-free water—All references to water in this method refer to organic-free reagent water, as defined in chapter I SW-846.

3.6.5.3 Methylene chloride, CH_2Cl_2 —HPLC grade or equivalent.

3.6.5.4 Methanol, CH_3OH —HPLC grade or equivalent.

3.6.5.5 Ethanol (absolute), $\text{CH}_3\text{CH}_2\text{OH}$ —HPLC grade or equivalent.

3.6.5.6 2,4-Dinitrophenylhydrazine (DNPH) (70% (W/W)), [2,4-(O_2N)₂ C_6H_3] NH_2 , in organic-free reagent water.

3.6.5.7 Formalin (37.8 percent (w/w)), formaldehyde in organic-free reagent water.

3.6.5.8 Acetic acid (glacial), $\text{CH}_3\text{CO}_2\text{H}$.

3.6.5.9 Sodium hydroxide solutions NaOH , 1.0 N and 5 N.

3.6.5.10 Sodium chloride, NaCl .

3.6.5.11 Sodium sulfite solution, Na_2SO_3 , 0.1 M.

3.6.5.12 Hydrochloric Acid, HCl , 0.1 N.

3.6.5.13 Extraction fluid—Dilute 64.3 ml of 1.0 N NaOH and 5.7 ml glacial acetic acid to 900 ml with organic-free reagent water. Dilute to 1 liter with organic-free reagent water. The pH should be 4.93 ± 0.02 .

3.6.5.14 Stock standard solutions.

3.6.5.14.1 Stock formaldehyde (approximately 1.00 mg/ml)—Prepare by diluting 265 μl formalin to 100 ml with organic-free reagent water.

3.6.5.14.1.1 Standardization of formaldehyde stock solution—Transfer a 25 ml aliquot of a 0.1 M Na_2SO_3 solution to a beaker and record the pH. Add a 25.0 ml aliquot of the formaldehyde stock solution (section 3.6.5.14.1) and record the pH. Titrate

this mixture back to the original pH using 0.1 N HCl. The formaldehyde concentration is calculated using the following equation:

$$\text{Concentration (mg/ml)} = 30.03 \times [\text{HCl}] \times (\text{ml HCl}) 25.0$$

where:

N HCl = Normality of HCl solution used.
ml HCl = ml of standardized HCl solution used.

30.03 = MW of formaldehyde.

3.6.5.14.2 Stock formaldehyde and acetaldehyde—Prepare by adding 265 μL formalin and 0.1 g acetaldehyde to 90 ml of water and dilute to 100 ml. The concentration of acetaldehyde in this solution is 1.00 mg/ml. Calculate the concentration of formaldehyde in this solution using the results of the assay performed in section 3.6.5.14.1.1.

3.6.5.14.3 Stock standard solutions must be replaced after six months, or sooner, if comparison with check standards indicates a problem.

3.6.5.15 Reaction Solutions.

3.6.5.15.1 DNPH (1.00 $\mu\text{g/L}$)—Dissolve 142.9 mg of 70% (w/w) reagent in 100 ml absolute ethanol. Slight heating or sonication may be necessary to effect dissolution.

3.6.5.15.2 Acetate buffer (5 N) Prepare by neutralizing glacial acetic acid to pH 5 with 5 N NaOH solution. Dilute to standard volume with water.

3.6.5.15.3 Sodium chloride solution (saturated) Prepare by mixing of the reagent grade solid with water.

3.6.6 Sample Collection, Preservation, and Handling

3.6.6.1 See the introductory material to this Chapter, Organic Analytes, section 4.1 of SW-846.

3.6.6.2 Environmental liquid and leachate samples must be refrigerated at 4 °C, and must be derivatized within 5 days of sample collection and analyzed within 3 days of derivatization.

3.6.6.3 Stack gas samples collected by Method 0011 must be refrigerated at 4 °C. It is recommended that samples be extracted within 30 days of collection and that extracts be analyzed within 30 days of extraction.

3.6.7 Procedure

3.6.7.1 Extraction of Solid Samples.

3.6.7.1.1 All solid samples should be homogeneous. When the sample is not dry, determine the dry weight of the sample, using a representative aliquot.

3.6.7.1.1.1 Determination of dry weight—In certain cases, sample results are desired based on a dry weight basis. When such data is desired, or required, a portion of sample for dry weight determination should be weighed out at the same time as the portion used for analytical determination.

Warning: The drying oven should be contained in a hood or vented. Significant laboratory contamination may result from drying a heavily contaminated hazardous waste sample.

3.6.7.1.1.2 Immediately after weighing the sample for extraction, weigh 5–10 g of the sample into a tared crucible. Determine the % dry weight of the sample by drying overnight at 105 °C. Allow to cool in a desiccator before weighing:

$$\% \text{ dry weight} = \frac{\text{g of dry sample}}{\text{g of sample}} \times 100$$

3.6.7.1.2 Measure 25 g of solid into a 500 ml bottle with a Teflon lined screw cap or crimp top, and add 500 ml of extraction fluid (section 3.6.5.13). Extract the solid by rotating the bottle at approximately 30 rpm for 18 hours. Filter the extract through glass fiber paper and store in sealed bottles at 4 °C. Each ml of extract represents 0.050 g solid.

3.6.7.2 Cleanup and Separation.

3.6.7.2.1 Cleanup procedures may not be necessary for a relatively clean sample matrix. The cleanup procedures recommended in this method have been used for the analysis of various sample types. If particular circumstances demand the use of an alternative cleanup procedure, the analyst must determine the elution profile and demonstrate that the recovery of formaldehyde is no less than 85% of recoveries specified in Table 3.6-3. Recovery may be lower for samples which form emulsions.

3.6.7.2.2 If the sample is not clean, or the complexity is unknown, the entire sample should be centrifuged at 2500 rpm for 10 minutes. Decant the supernatant liquid from the centrifuge bottle, and filter through glass fiber filter paper into a container which can be tightly sealed.

3.6.7.3 Derivatization.

3.6.7.3.1 For aqueous samples, measure a 50 to 100 ml aliquot of the sample. Quantitatively transfer the sample aliquot to the reaction vessel (section 3.6.4.1).

3.6.7.3.2 For solid samples, 1 to 10 ml of leachate (section 3.6.7.1) will usually be required. The amount used for a particular sample must be determined through preliminary experiments.

TABLE 3.6-3.—SINGLE OPERATOR ACCURACY AND PRECISION USING SOLID SORBENT EXTRACTION

Analyte	Matrix type	Average percent recovery	Standard deviation percent	Spike range ($\mu\text{g/L}$)	No. of analyses
Formaldehyde.....	Reagent water.....	86	9.4	15–1430	39
	Final effluent.....	90	11.0	46.8–1430	16
	Phenol formaldehyde sludge.....	93	12.0	457–1430	15

Note: For all reactions, the total volume of the aqueous layer should be adjusted to 100 ml with water.

3.6.7.3.3 Derivatization and extraction of the derivative can be accomplished using the solid sorbent (section 3.6.7.3.4) or methylene chloride option (section 3.6.7.3.5).

3.6.7.3.4 Solid Sorbent Option.

3.6.7.3.4.1 Add 4 ml of acetate buffer and adjust the pH to 5.0 ± 0.1 with glacial acetic acid or 5 N NaOH. Add 6 ml of DNPH reagent, seal the container, and place on a wrist-action shaker for 30 minutes.

3.6.7.3.4.2 Assemble the vacuum manifold and connect to a water aspirator or vacuum pump. Assemble solid sorbent cartridges containing a minimum of 1.5 g of C18 sorbent, using connectors supplied by the manufacturer, and attach the sorbent train to the vacuum manifold. Condition each cartridge by passing 10 ml dilute acetate buffer (10 ml 5 N acetate buffer dissolved in

250 ml water) through the sorbent cartridge train.

3.6.7.3.4.3 Remove the reaction vessel from the shaker and add 10 ml saturated NaCl solution to the vessel.

3.6.7.3.4.4 Add the reaction solution to the sorbent train and apply a vacuum so that the solution is drawn through the cartridges at a rate of 3 to 5 ml/min. Release the vacuum after the solution has passed through the sorbent.

3.6.7.3.4.5 Elute each cartridge train with approximately 9 ml of absolute ethanol, directly into a 10 ml volumetric flask. Dilute the solution to volume with absolute ethanol, mixed thoroughly, and place in a tightly sealed vial until analyzed.

3.6.7.3.5 Methylene Chloride Option.

3.6.7.3.5.1 Add 5 ml of acetate buffer and adjust the pH to 5.0 ± 0.5 with glacial acetic acid or 5 N NaOH. Add 10 ml of DNPH

reagent, seal the container, and place on a wrist-action shaker for 1 hour.

3.6.7.3.5.2 Extract the solution with three 20 ml portions of methylene chloride, using a 250 ml separatory funnel, and combine the methylene chloride layers. If an emulsion forms upon extraction, remove the entire emulsion and centrifuge at 2000 rpm for 10 minutes. Separate the layers and proceed with the next extraction.

3.6.7.3.5.3 Assemble a Kuderna-Danish (K-D) concentrator by attaching a 10 ml concentrator tube to a 500 ml evaporator flask. Wash the K-D apparatus with 25 ml of extraction solvent to complete the quantitative transfer.

3.6.7.3.5.4 Add one to two clean boiling chips to the evaporative flask and attach a three ball Snyder column. Preset the Snyder column by adding about 1 ml methylene chloride to the top. Place the K-D apparatus

on a hot water bath (80–90 °C) so that the concentrator tube is partially immersed in the hot water and the entire lower rounded surface of the flask is bathed with hot vapor. Adjust the vertical position of the apparatus and the water temperature, as required, to complete the concentration in 10–15 min. At the proper rate of distillation the balls of the column will actively chatter, but the chambers will not flood with condensed solvent. When the apparent volume of liquid reaches 10 ml, remove the K-D apparatus and allow it to drain and cool for at least 10 min.

3.6.7.3.5.5 Prior to liquid chromatographic analysis, the solvent must be exchanged to methanol. The analyst must ensure quantitative transfer of the extract concentrate. The exchange is performed as follows:

3.6.7.3.5.5.1 Following K-D concentration of the methylene chloride extract to <10 ml using the macro Snyder column, allow the apparatus to cool and drain for at least 10 minutes.

3.6.7.3.5.5.2 Momentarily remove the Snyder column, add 5 ml of the methanol, a new glass bed, or boiling chip, and attach the micro Snyder column. Concentrate the extract using 1 ml of methanol to prewet the Snyder column. Place the K-D apparatus on the water bath so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and the water temperature, as required, to complete concentration. At the proper rate of distillation the balls of the column will actively chatter, but the chambers will not flood. When the apparent volume of liquid reaches <5 ml, remove the K-D apparatus and allow it to drain and cool for at least 10 minutes.

3.6.7.3.5.5.3 Remove the Snyder column and rinse the flask and its lower joint with 1–2 ml of methanol and add to concentrator tube. A 5-ml syringe is recommended for this operation. Adjust the extract volume to 10 ml. Stopper the concentrator tube and store refrigerated at 4 °C if further processing will not be performed immediately. If the extract will be stored longer than two days, it should be transferred to a vial with a Teflon-lined screw cap or crimp top. Proceed with liquid chromatographic analysis if further cleanup is required.

3.6.7.4 Extraction of Stack Gas Samples Collected by Method 0011.

3.6.7.4.1 Measure the aqueous volume of the sample prior to extraction (for moisture determination in case the volume was not measured in the field). Pour the sample into a separatory funnel and drain the methylene chloride into a volumetric flask.

3.6.7.4.2 Extract the aqueous solution with two or three aliquots of methylene chloride. Add the methylene chloride extracts to the volumetric flask.

3.6.7.4.3 Fill the volumetric flask to the line with methylene chloride. Mix well and remove an aliquot.

3.6.7.4.4 If high levels of formaldehyde are present, the extract can be diluted with mobile phase, otherwise the extract must be solvent exchanged as described in section 3.6.7.5.3. If low levels of formaldehyde are present, the sample should be concentrated during the solvent exchange procedure.

3.6.7.5 Chromatographic Conditions.

Column..... C18, 250 mm×4.6 mm ID, 5 µm particle size
Mobile Phase methanol/water, 75:25 (v/v), isocratic
Flow Rate 1.0 ml/min
UV Detector..... 360 nm
Injection Volume 20 µl

3.6.7.6 Calibration.

3.6.7.6.1 Establish liquid chromatographic operating parameters to produce a retention time equivalent to that indicated in Table 3.6-1 for the solid sorbent options, or in Table 3.6-2 for methylene chloride option. Suggested chromatographic conditions are provided in section 3.6.7.5. Prepare derivatized calibration standards according to the procedure in section 3.6.7.6.1.

Calibrate the chromatographic system using the external standard technique (section 3.6.7.6.1.2).

3.6.7.6.1.1 Preparation of calibration standards.

3.6.7.6.1.1.1 Prepare calibration standard solutions of formaldehyde and acetaldehyde in water from the stock standard (section 3.6.5.14.2). Prepare these solutions at the following concentrations (in µg/ml) by serial dilution of the stock standard solution: 50, 20, 10. Prepare additional calibration standard solutions at the following concentrations, by dilution of the appropriate 50, 20, or 10 µg/ml standard: 5, 0.5, 2, 0.2, 1, 0.1.

3.6.7.6.1.1.2 Process each calibration standard solution through the derivatization option used for sample processing (section 3.6.7.3.4 or 3.6.7.3.5).

3.6.7.6.1.2 External standard calibration procedure.

3.6.7.6.1.2.1 Analyze each derivatized calibration standard using the chromatographic conditions listed in Tables 3.6-1 and 3.6-2, and tabulate peak area against concentration injected. The results may be used to prepare calibration curves for formaldehyde and acetaldehyde.

3.6.7.6.1.2.2 The working calibration curve must be verified on each working day by the measurement of one or more calibration standards. If the response for any analyte varies from the previously established responses by more than 10%, the test must be repeated using a fresh calibration standard after it is verified that the analytical system is in control. Alternatively, a new calibration curve may be prepared for that compound. If an autosampler is available, it is convenient to prepare a calibration curve daily by analyzing standards along with test samples.

3.6.7.7 Analysis.

3.6.7.7.1 Analyze samples by HPLC, using conditions established in section 3.6.7.6.1. Tables 3.6-1 and 3.6-2 list the retention times and MDLs that were obtained under these conditions. Other HPLC columns, chromatographic conditions, or detectors may be used if the requirements for section 3.6.8.1 are met, or if the data are within the limits described in Tables 3.6-1 and 3.6-2.

3.6.7.7.2 The width of the retention time window used to make identifications should be based upon measurements of actual retention time variations of standards over

the course of a day. Three times the standard deviation of a retention time for a compound can be used to calculate a suggested window size; however, the experience of the analyst should weigh heavily in the interpretation of the chromatograms.

3.6.7.7.3 If the peak area exceeds the linear range of the calibration curve, a smaller sample volume should be used. Alternatively, the final solution may be diluted with ethanol and reanalyzed.

3.6.7.7.4 If the peak area measurement is prevented by the presence of observed interferences, further cleanup is required. However, none of the 3600 method series have been evaluated for this procedure.

3.6.7.8 Calculations.

3.6.7.8.1 Calculate each response factor as follows (mean value based on 5 points):

$$RF = \frac{\text{concentration of standard}}{\text{area of the signal}}$$

$$\text{mean} - RF - \frac{RF}{\frac{5}{(\sum_i^5 RF_i)}} -$$

3.6.7.8.2 Calculate the concentration of formaldehyde and acetaldehyde as follows: µg/ml = (RF) (area of signal) (concentration factor)

where:

$$\text{concentration factor} = \frac{\text{Final Volume of Extract}}{\text{Initial Extract Volume}}$$

Note: For solid samples, a dilution factor must be included in the equation to account for the weight of the sample used.

3.6.7.8.3 Calculate the total weight of formaldehyde in the stack gas sample as follows:

$$\text{total } \mu\text{g/ml} = (RF) (\text{area of signal}) (\text{concentration factor})$$

where:

$$\text{concentration factor} = \frac{\text{Final Volume of Extract}}{\text{Initial Extract Volume}}$$

3.6.8 Quality Control

3.6.8.1 Refer to Chapter One of SW-846 for guidance on quality control procedures.

3.6.9 Method Performance

3.6.9.1 The MDL concentrations listed in Table 3.6-1 were obtained using organic-free water and solid sorbent extraction. Similar results were achieved using a final effluent and sludge leachate. The MDL concentrations listed in Table 3.6-2 were obtained using

organic-free water and methylene chloride extraction. Similar results were achieved using representative matrices.

3.6.9.2 This method has been tested for linearity of recovery from spiked organic-free water and has been demonstrated to be applicable over the range from $2 \times \text{MDL}$ to $200 \times \text{MDL}$.

3.6.9.3 In a single laboratory evaluation using several spiked matrices, the average recoveries presented in Tables 3.6-3 and 3.6-

4 were obtained using solid sorbent and methylene chloride extraction, respectively. The standard deviations of the percent recovery are also included in Tables 3.6-3 and 3.6-4.

3.6.9.4 A representative chromatogram is presented in Figure 3.6-1.

3.6.10 References

1. Federal Register, 1986, 51, 40643-40652; November 7.

2. EPA Methods 6010, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. SW-846, Third Edition, September 1988. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460.

TABLE 3.6-4.— SINGLE OPERATOR ACCURACY AND PRECISION USING METHYLENE CHLORIDE EXTRACTION

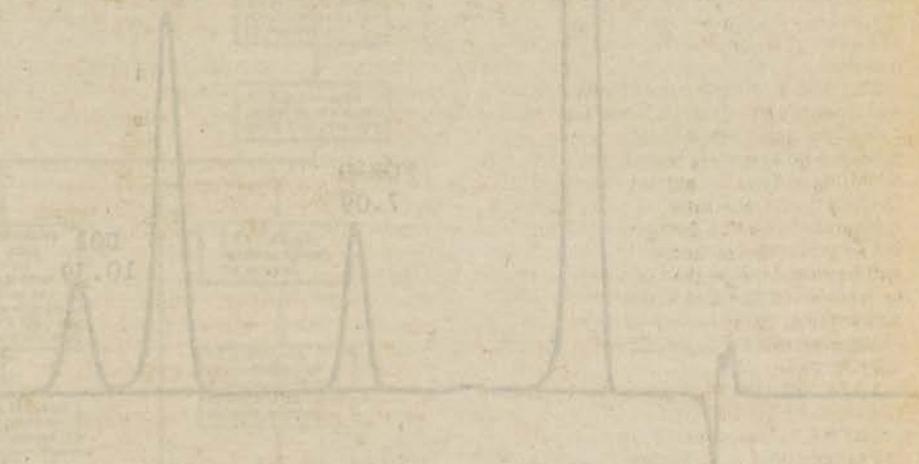
Analyte	Matrix type	Average percent recovery (x)	Standard deviation percent (p)	Spike range ($\mu\text{g/L}$)	No. of analyses
Formaldehyde	Reagent Water	91	2.5	50-1000	9
	Groundwater	92.5	8.2	50	6
	Liquids	69.6	16.3	250	12
Acetaldehyde	Reagent Water	60.3	3.2	50-1000	9
	Groundwater	63.6	10.9	50	12
	Liquids (2 types)	44.0	20.2	250	12
	Solids	58.4	2.7	0.10-1.0*	12

* Spike range in units of mg/g.

x = Average recovery expected for this method.

p = Average standard deviation expected for this method.

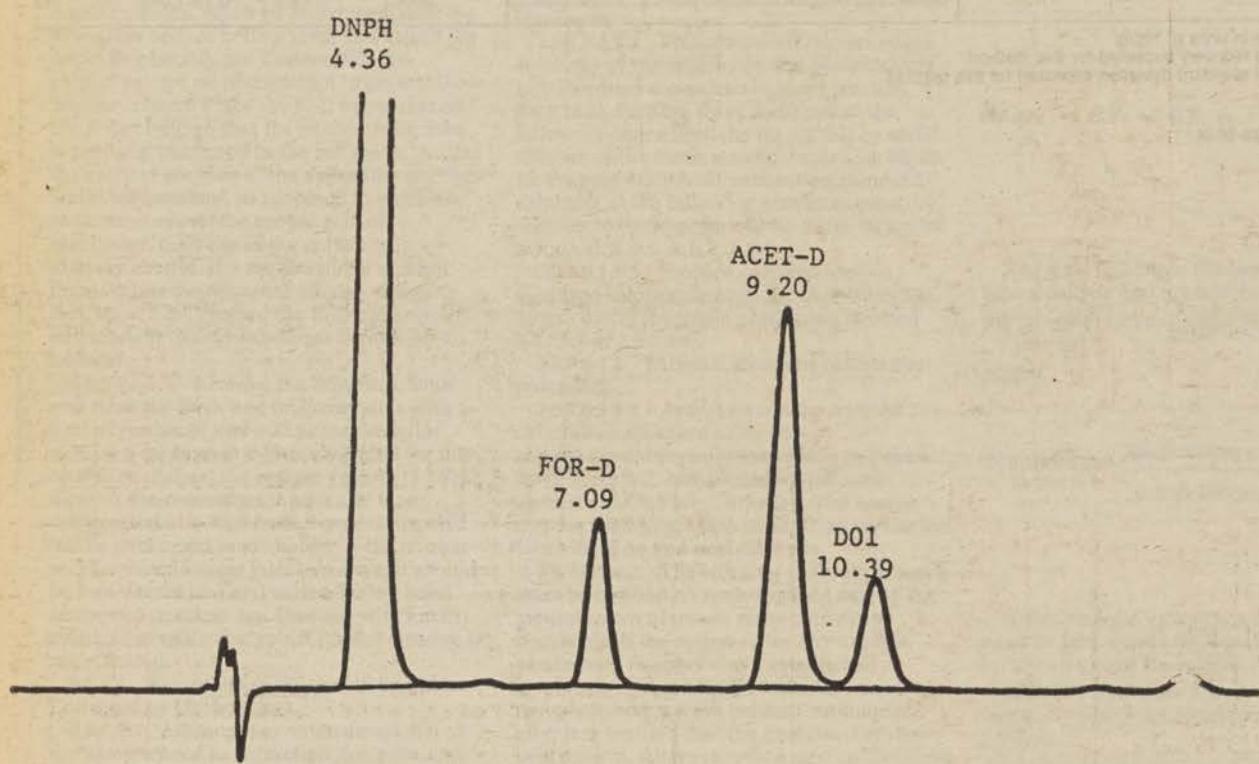
BILLING CODE 6560-50-M



6560-50-M-003 - D-807
6560-50-M-003 - G-733A

FIGURE 3.6-1

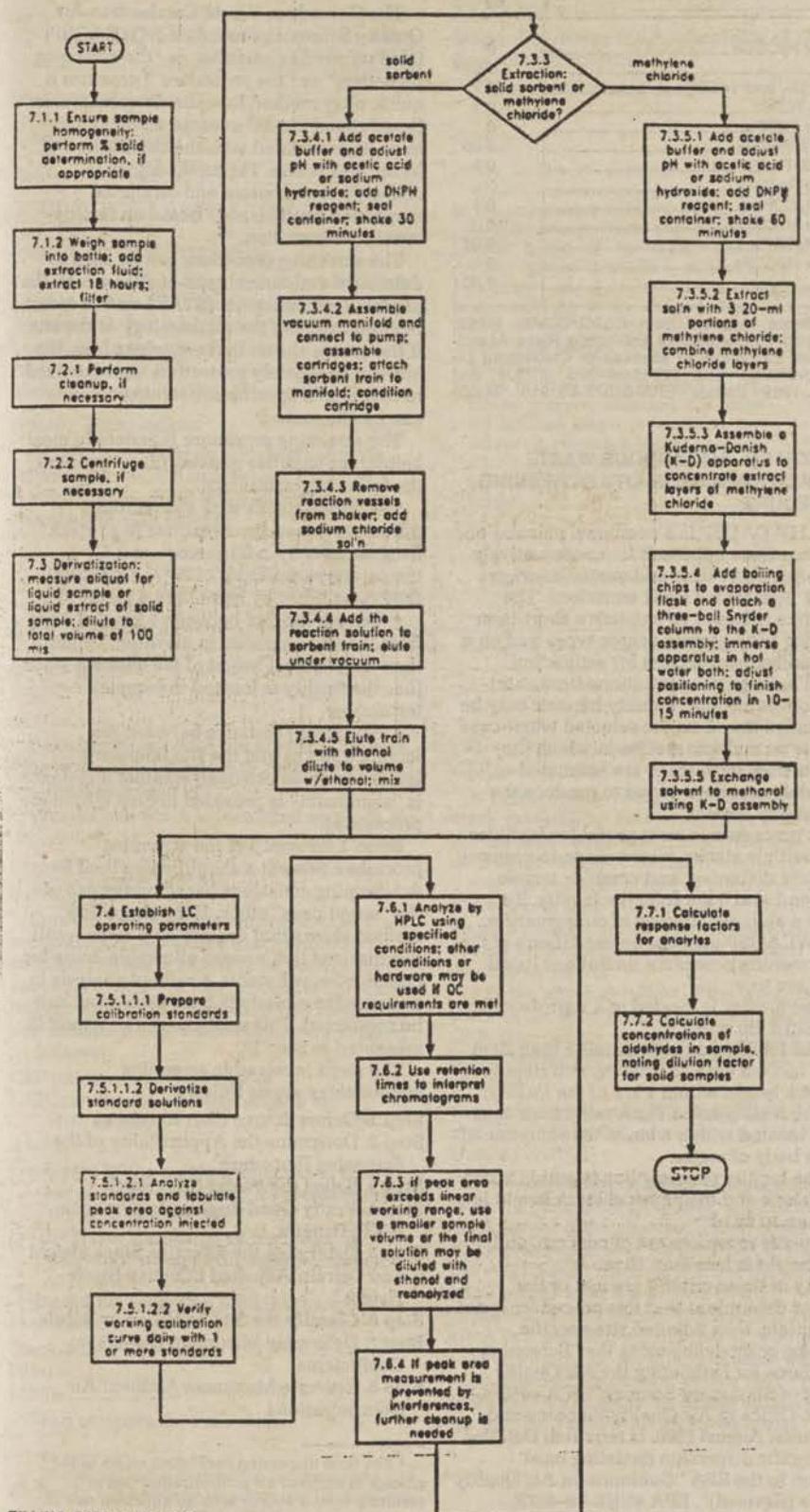
REPRESENTATIVE CHROMATOGRAM OF A 50 µg/L SOLUTION OF FORMALDEHYDE



FOR-D = Formaldehyde derivative
ACET-D = Acetaldehyde derivative

FIGURE 3.6-2

FORMALDEHYDE BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC)



SECTION 4.0 PROCEDURE FOR ESTIMATING THE TOXICITY EQUIVALENCY OF CHLORINATED DIBENZO-P-DIOXIN AND DIBENZOFURAN CONGENERS

PCDDs and PCDFs must be determined using the method given in section 3.4 of this document. In this method, individual congeners or homologues¹ are measured and then summed to yield a total PCDD/PCDF value. No toxicity factors are specified in the method to compute risks from such emissions.

For the purpose of estimating risks posed by emissions from boilers and industrial furnaces, however, specific congeners and homologues must be measured using the specified method and then multiplied by the assigned toxicity equivalence factors (TEFs), using procedures described in "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update," EPA/625/3-89/016, March 1989. The resulting 2,3,7,8-TCDD equivalents value is used in the subsequent risk calculations and modeling efforts as discussed in the BIF final rule.

The procedure for calculating the 2,3,7,8-TCDD equivalent is as follows:

1. Using method 23, determine the concentrations of 2,7,3,8-congeners of various PCDDs and PCDFs in the sample.

2. Multiply the congener concentrations in the sample by the TEF listed in Table 4.0-1 to express the congener concentrations in terms of 2,3,7,8-TCDD equivalent. Note that congeners not chlorinated at 2,3,7, and 8 positions have a zero toxicity factor in this table.

3. Add the products obtained in step 2, to obtain the total 2,3,7,8-TCDD equivalent in the sample.

Sample calculations are provided in EPA document No. EPA/625/3-89/016, March 1989, which can be obtained from the EPA, ORD Publications Office, Cincinnati, Ohio (Phone no. 513-569-7562).

TABLE 4.0-1.—2,3,7,8-TCDD TOXICITY EQUIVALENCE FACTORS (TEFs)¹

Compound	I-TEFs, 89
Mono-, Di-, and TriCDDs.....	0
2,3,7,8-TCDD.....	1
Other TCDDs.....	0
2,3,7,8-PeCDD.....	0.5
Other PeCDDs.....	0
2,3,7,8-HxCDD.....	0.1
Other HxCDDs.....	0
2,3,7,8-HpCDD.....	0.01

¹ The term "congener" refers to any one particular member of the same chemical family; e.g., there are 75 congeners of chlorinated dibenzo-p-dioxins. The term "homologue" refers to a group of structurally related chemicals that have the same degree of chlorination. For example, there are eight homologues of CDs, monochlorinated through octachlorinated. Dibenzo-p-dioxins and dibenzofurans that are chlorinated at the 2,3,7, and 8 positions are denoted as "2378" congeners, except when 2,3,7,8-TCDD is uniquely referred to; e.g., 1,2,3,7,8-PeCDF and 2,3,4,7,8-PeCDF are both referred to as "2378-PeCDFs."

TABLE 4.0-1.—2,3,7,8-TCDD TOXICITY EQUIVALENCE FACTORS (TEFs)¹—Continued

Compound	I-TEFs, 89
Other HpCDDs	0
OCDD	0.001
Mono-, Di-, and TriCDFs	0
2,3,7,8-TCDF	0.1
Other TCDFs	0
1,2,3,7,8-PeCDF	0.05
2,3,4,7,8-PeCDF	0.5
Other PeCDFs	0
2378-HxCDFs	0.1
Other HxCDFs	0
2378-HpCDFs	0.01
Other HpCDFs	0
OCDF	0.001

Reference: Adapted from NATO/CCMS, 1988a.
¹ Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) 1989 Update EPA/625/3-89/016, March 1989.

SECTION 5.0 HAZARDOUS WASTE COMBUSTION AIR QUALITY SCREENING PROCEDURE

The HWCAQSP is a combined calculation/reference table approach for conservatively estimating short-term and annual average facility impacts for stack emissions. The procedure is based on extensive short-term modeling of 11 generic source types and on a set of adjustment factors for estimating annual average concentrations from short-term concentrations. Facility impacts may be determined based on the selected worst-case stack or on multiple stacks, in which the impacts from each stack are estimated separately and then added to produce the total facility impact.

This procedure is most useful for facilities with multiple stacks, large source-to-property boundary distances, and complex terrain between 1 and 5 km from the facility. To ensure a sufficient degree of conservatism, the HWCAQSP may not be used if any of the five screening procedure limitations listed below are true:

- The facility is located in a narrow valley less than 1 km wide;
- The facility has a stack taller than 20 m and is located such that the terrain rises to the stack height within 1 km of the facility;
- The facility has a stack taller than 20 m and is located within 5 km of the shoreline of a large body of water;
- The facility property line is within 200 m of the stack and the physical stack height is less than 10 m; or
- On-site receptors are of concern, and stack height is less than 10 m.

If any of these criteria are met or the Director determines that this procedure is not appropriate, then detailed site-specific modeling or modeling using the "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources," EPA-450/4-88-010, Office of Air Quality Planning and Standards, August 1988, is required. Detailed site-specific dispersion modeling must conform to the EPA "Guidance on Air Quality Models (Revised)", EPA 450/2-78-027R, Office of Air Quality Planning and Standards,

Research Triangle Park, North Carolina, July 1986. This document provides guidance on both the proper selection and regulatory application of air quality models.

Introduction

The Hazardous Waste Combustion Air Quality Screening Procedure (HWCAQSP) (also referred to hereafter as "the screening procedure" or "the procedure") provides a quick, easy method for estimating maximum (hourly) and annual average ambient air impacts associated with the combustion of hazardous waste. The methodology is conservative in nature and estimates dispersion coefficients¹ based on facility-specific information.

The screening procedure can be used to determine emissions limits at sites where the nearest meteorological (STAR) station is not representative of the meteorology at the site. If the screen shows that emissions from the site are adequately protective, then the need to collect site-specific meteorological data can be eliminated.

The screening procedure is generally most helpful for facilities meeting one or more of the following conditions:

- Multiple stacks with substantially different release specifications (e.g., stack heights differ by >50 percent, exit temperatures differ by >50 °K, or the exit flow rates differ by more than a factor of 2);
- Terrain located between 1 km and 5 km from the site increases in elevation by more than the physical height of the shortest stack (i.e., the facility is located in complex terrain), or
- Significant distance between the facility's stacks and the site boundary [guidance on determining whether a distance is "significant" is provided in Step 6(B) of the procedure].

Steps 1 through 9 of the screening procedure present a simplified method for determining emissions based on the use of the "worst-case" stack. If the simplified method shows that desired feed rates result in emissions that exceed allowable limits for one or more pollutants, a refined analysis to examine the emissions from each stack can be conducted. This multiple-stack method is presented in Step 10.

The steps involved in screening methodology are as follows:

- Step 1. Define Source Characteristics
- Step 2. Determine the Applicability of the Screening Procedure
- Step 3. Select the Worst-Case Stack
- Step 4. Verify Good Engineering Practice (GEP) Criteria
- Step 5. Determine the Effective Stack Height and Terrain-Adjusted Effective Stack Height
- Step 6. Classify the Site as Urban or Rural
- Step 7. Determine Maximum Dispersion Coefficients
- Step 8. Estimate Maximum Ambient Air Concentrations

¹ The term dispersion coefficient refers to the change in ambient air concentration ($\mu\text{g}/\text{m}^3$) resulting from a source with an emission rate of 1 g/sec.

Step 9. Determine Compliance With Regulatory Limits
Step 10. Multiple Stack Method

Step 1: Define Source Characteristics
 Provide the following source data:²

Stack Data:	Stack No. 1	Stack No. 2	Stack No. 3
Physical stack height (m)
Exhaust temperature (°K)
Flow rate (m³/sec)

Nearby Building Dimensions

Consider all buildings within five building heights or five maximum projected widths of the stack(s). For the building with the greatest height, fill in the spaces below.

Building Height (m) _____
 Maximum projected building width (m) _____

Nearby Terrain Data

Determine maximum terrain rise for the following three distance ranges from the facility (not required if the highest stack is less than 10 m in height):

(m)	(m)	(m)	(m)
0-0.5 km	0-2.5 km	0-5 km	

If the answer is "no" to all the preceding questions, then the HWCAQSP is acceptable. If the answer to any question is "yes", the procedure is not acceptable.

Step 3: Select the Worst-Case Stack

If the facility has several stacks, a worst-case stack must be chosen to conservatively represent release conditions at the facility. Follow the steps below to identify the worst-case stack.

Apply the following equation to each stack:

$$K = HVT$$

where:

K=an arbitrary parameter accounting for the relative influence of the stack height and plume rise.

H=Physical stack height (m)

V=Flow rate (m³/sec)

T=Exhaust temperature (°K)

Complete the following table to compute the "K" value for each stack:

Distance from facility to nearest shoreline (km) _____
 Valley width (km) _____

Step 2: Determine the Applicability of the Screening Procedure

Fill in the following data:

Yes No

Is the facility in a valley < km in width? _____

Is the terrain rise within 1 km of the facility greater than the physical stack height of the tallest stack? (Only applies to stacks ≥ 20 meters in height) _____

Is the distance to the nearest shoreline < 5 km? (Only applies to facilities with stacks ≥ 20 meters in height) _____

For the building listed in Step 1, is the closest property boundary < 5 times the building height or < 5 times the maximum projected building width? (Only applies to facilities with a stack height < 2.5 times the building height) _____

Stack No.	Stack height (m)	×	Flow rate (m³/sec)	×	Exit temp (°K)	=	K
1	×	×	=	
2	×	×	=	
3	×	×	=	

Select the stack with the lowest "K" value. This is the worst-case stack that will be used for Steps 4 through 9.

Worst-Case Stack is identified as Stack No. _____

Step 4: Verify Good Engineering Practice (GEP) Criteria

Confirm that the selected worst-case stack meets Good Engineering Practice (GEP) criteria. The stack height to be used in the subsequent steps of this procedure must not be greater than the maximum GEP. Maximum and minimum GEP stack heights are defined as follows:

$$CEP \text{ (minimum)} = H + (1.5 \times L)$$

$$CEP \text{ (maximum)} = \text{greater of } 65 \text{ m or }$$

$$H + (1.5 \times L)$$

where:

H=height of the building selected in Step 1 measured from ground level elevation at the base of the stack

L=the lesser dimension of the height or projected width of the building selected in Step 1

Record the following data for the worst-case stack:

$$\text{Stack height (m)} = \text{_____}$$

$$H(m) = \text{_____}$$

$$L(m) = \text{_____}$$

Then compute the following:

$$\begin{aligned} GEP \text{ (minimum)} (\text{m}) &= \text{_____} \\ GEP \text{ (maximum)} (\text{m}) &= \text{_____} \end{aligned}$$

- If the physical height of the worst-case stack exceeds the maximum GEP, then use the maximum GEP stack height for the subsequent steps of this analysis;

- If the physical height of the worst-case stack is less than the minimum GEP, then use generic source number 11 as the selected source for further analysis and proceed directly to Step 6;

- If the physical height of the worst-case stack is between the minimum and maximum GEP, then use the actual physical stack height for the subsequent steps of this analysis.

Step 5: Determine the Effective Stack Height and the Terrain-Adjusted Effective Stack Height (TAESH)

The effective stack height is an important factor in dispersion modeling. The effective stack height is the physical height of the stack plus plume rise. As specified in Step 4, the stack height used to estimate the effective stack height must not exceed GEP requirements. Plume rise is a function of the stack exit gas temperature and flow rate.

In this analysis, the effective stack height is used to select the generic source that represents the dispersion characteristics of the facility. For facilities located in flat

terrain and for all facilities with worst-case stacks less than or equal to 10 meters in height, generic source numbers are selected strictly on the basis of effective stack height. In all other cases, the effective stack height is further adjusted to take into account the terrain rise near the facility. This "terrain-adjusted effective stack height" (TAESH) is then used to select the generic source number that represents the dispersion characteristics of the facility. Follow the steps below to identify the effective stack height, the TAESH (where applicable), and the corresponding generic source number.

(A) Go to Table 5.0-1 and find the plume rise value corresponding to the stack temperature and exit flow rate for the worst-case stack determined in Step 3.

$$\text{Plume rise} = \text{_____} \text{ (m)}$$

(B) Add the plume rise to the GEP stack height of the worst-case stack determined in Steps 3 and 4.

$$\begin{array}{ccc} \text{GEP stack} & + & \text{Plume rise} \\ \text{height (m)} & & \text{(m)} \\ \hline & + & = \\ & & \text{Effective stack height (m)} \end{array}$$

(C) Go to the first column of Table 5.0-2 and identify the range of effective stack

² Worksheet space is provided for three stacks. If the facility has additional stacks, copy the form and revise stack identification numbers for 4, 5, etc.

heights that includes the effective stack height estimated in Step 5(B). Record the generic source number that corresponds to this range.

Generic source number=_____

(D) If the source is located in flat terrain³, or if the generic source number identified in Step 5(C) above is 1 or 11 (regardless of

terrain classification), use the generic source number determined in Step 5(C) and proceed directly to Step 6. Otherwise, continue to Step 5(E).

(E) For those situations where the conditions in Step 5(D) do not apply, the effective stack height must be adjusted for terrain. The TAESH for each distance range is computed by subtracting the terrain rise

within the distance range from the effective stack height.⁴

³ The terrain is considered flat and terrain adjustment factors are not used if the maximum terrain rise within 5 km of the facility (see Step 1) is less than 10 percent of the physical stack height of the worst-case stack.

⁴ Refer to Step 1 for terrain adjustment data. Note that the distance from the source to the outer radii of each range is used. For example, for the range >0.5–2.5 km, the maximum terrain rise in the range 0.0–2.5 km is used.

TABLE 5.0-1.—ESTIMATED PLUME RISE (IN METERS) BASED ON STACK EXIT FLOW RATE AND GAS TEMPERATURE

Flow rate (m ³ /s)	Exhaust Temperature (°K)										
	<325	325–349	350–399	400–449	450–499	500–599	600–699	700–799	800–999	1000–1499	>1499
<0.5.....	0	0	0	0	0	0	0	0	0	0	0
0.5–0.9.....	0	0	0	0	0	0	0	0	1	1	1
1.0–1.9.....	0	0	0	0	1	1	2	3	3	3	4
2.0–2.9.....	0	0	1	3	4	4	6	6	7	8	9
3.0–3.9.....	0	1	2	5	6	7	9	10	11	12	13
4.0–4.9.....	1	2	4	6	8	10	12	13	14	15	17
5.0–7.4.....	2	3	5	8	10	12	14	16	17	19	21
7.5–9.9.....	3	5	8	12	15	17	20	22	22	23	24
10.0–12.4.....	4	6	10	15	19	21	23	24	25	26	27
12.5–14.9.....	4	7	12	18	22	23	25	26	27	28	29
15.0–19.9.....	5	8	13	20	23	24	26	27	28	29	31
20.0–24.9.....	6	10	17	23	25	27	29	30	31	32	34
25.0–29.9.....	7	12	20	25	27	29	31	32	33	35	36
30.0–34.9.....	8	14	22	26	29	31	33	35	36	37	39
35.0–39.9.....	9	16	23	28	30	32	35	36	37	39	41
40.0–49.9.....	10	17	24	29	32	34	36	38	39	41	42
50.0–59.9.....	12	21	26	31	34	36	39	41	42	44	46
60.0–69.9.....	14	22	27	33	36	39	42	43	45	47	49
70.0–79.9.....	16	23	29	35	38	41	44	46	47	49	51
80.0–89.9.....	17	25	30	36	40	42	46	48	49	51	54
90.0–99.9.....	19	26	31	38	42	44	48	50	51	53	56
100.0–119.9.....	21	26	32	39	43	46	49	52	53	55	58
120.0–139.9.....	22	28	35	42	46	49	52	55	56	59	61
140.0–159.9.....	23	30	36	44	48	51	55	58	59	62	65
160.0–179.9.....	25	31	38	46	50	54	58	60	62	65	67
180.0–199.9.....	26	32	40	48	52	56	60	63	65	67	70
>199.9.....	26	33	41	49	54	58	62	65	67	69	73

TABLE 5.0-2—Selection of Generic Source Number

Effective stack height (m)	Generic source No.
<10.0.....	1
10.0–14.9.....	2
15.0–19.9.....	3
20.0–24.9.....	4
25.0–30.9.....	5
31.0–41.9.....	6
42.0–52.9.....	7
53.0–64.9.....	8
65.0–122.9.....	9
113.0+.....	10
Downwash.....	11

TABLE 5.0-3.—Classification of Land Use Types

Type ¹	Description	Urban or rural designation ²
I1	Heavy Industrial.....	Urban
I2	Light/Moderate Industrial.....	Urban
CI	Commercial.....	Urban
R1	Common Residential (Normal Easements).	Rural
R2	Compact Residential (Single Family).	Urban
R3	Compact Residential (Multi-Family).	Rural
R4	Estate Residential (Multi-Acre Plots).	Rural
A1	Metropolitan Natural.....	Rural
A2	Agricultural.....	Rural
A3	Undeveloped (Grasses/Weeds).	Rural
A4	Undeveloped (Heavily Wooded).	Rural
A5	Water Surfaces.....	Rural

¹ EPA, Guideline on Air Quality Models (Revised), EPA-450/2-78-027, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, July, 1986.

² Auer, August H. Jr., "Correlation of Land Use and Cover with Meteorological Anomalies," *Journal of Applied Meteorology*, pp. 636–643, 1978.

Distance range (km)	Effective stack-height (m) [see step 5(B)]	Maximum terrain-rise (m) (see step 1)	TAESH(m)
0.0-0.5.....	_____	-	=
>0.5-2.5.....	_____	-	=
>2.5-5.0.....	_____	-	=

If the terrain rise for any of the distance ranges is greater than the effective stack height, set the TAESH equal to zero and use generic source number 1 for that distance range.

Record the generic source numbers from Table 5.0-2 based on each of the TAESH values.

Distance range (km)	Generic source No. (after terrain adjustment)
0.0-0.5.....	_____
>0.5-2.5.....	_____
>2.5-5.0.....	_____

Step 6: Classify the Site as Urban or Rural

(A) Classify the land use near the facility as either urban or rural by determining the percentage of urban land use types (as defined in Table 3; for further guidance see the footnoted references) that fall within 3 km of the facility.⁵

Method Used to Estimate Percent Urban Land Use:	Visual	Planimeter
	_____	_____

Estimated Percentages.	Urban	Rural
	_____	_____

If the urban land use percentage is less than or equal to 30 percent based on a visual estimate, or 50 percent based on a planimeter, the local land use is considered rural. Otherwise, the local land use is considered urban.

Classification..... Urban
(check applicable space).

(B) Based on the TAESH and the urban/rural classification of surrounding land use, use the following table to determine the threshold distance between any stack and the nearest facility boundary.

Terrain adjusted effective stack height range (m)	Distance (m)	
	Urban	Rural
1-9.9.....	200	200
10-14.9.....	200	250
15-19.9.....	200	250
20-24.9.....	200	350
25-30.9.....	200	450
31-41.9.....	200	550
42-52.9.....	250	800
53-64.9.....	300	1000
65-112.9.....	400	1200
113+.....	700	2500

Record the following information:
Threshold distance from the table (m): _____

Minimum distance from any stack to property boundary (m): _____

If the minimum distance between any stack and the nearest facility boundary is greater than the threshold distance, the surrounding buffer distance is considered significant and the facility is likely to benefit from use of the HWCAQSP relative to the Tier I and II limits (see discussion of benefits from using HWCAQSP in Introduction section).

Step 7: Determine Maximum Dispersion Coefficients

(A) Determine maximum average hourly dispersion coefficients. Based on the results of Step 6(A), select either Table 5.0-4 (urban) or Table 5.0-5 (rural) to determine the maximum average hourly dispersion coefficient.⁶ For flat terrain [defined in Step 5(D)] and for all sites with generic source numbers 1 or 11, use Step 7(A) (1). For rolling or complex terrain (excluding generic sources numbers 1 and 11), use Step 7(A) (2).

(1) Search down the appropriate generic source number column [based on Step 5(C)], beginning at the minimum fenceline distance listed in Step 6(B).⁷ Record the maximum average hourly dispersion coefficient encountered.
Maximum Average Hourly Dispersion Coefficient = _____ ($\mu\text{g}/\text{m}^3/\text{g/sec}$)

(2) For each of the three distance-based generic source numbers listed in Step 5(E), search down the appropriate generic source number columns, beginning at the minimum fenceline distance listed in Step 6(B). Note that different columns may be used for each of the three distance ranges if there is a need for terrain adjustment. Record the maximum dispersion coefficient for each generic source number.

Distance range (km)	Generic source No. [from Step 5(E)]	Maximum dispersion coefficient ($\mu\text{g}/\text{m}^3/\text{m/sec}$)
0.0-0.5.....	_____	_____
>0.5-2.5.....	_____	_____
>2.5-5.0.....	_____	_____
>5.0-20.0.....	_____	_____

TABLE 5.0-4.—ISCT PREDICATED MAXIMUM CONCENTRATIONS ($\mu\text{g}/\text{M}^3$)^a FOR HAZARDOUS WASTE COMBUSTORS USING URBAN CONDITIONS

Distance (KM)	Generic Source #1 (<10M)	Generic Source #2 (10M)	Generic Source #3 (15M)	Generic Source #4 (20M)	Generic Source #5 (25M)	Generic Source #6 (31M)	Generic Source #7 (42M)	Generic Source #8 (53M)	Generic Source #9 (65M)	Generic Source #10 (113M)	Generic Source #11 (Down-wash)
0.20.....	680.1	517.5	368.7	268.7	168.5	129.8	63.4	30.1	18.4	1.6	662.3
0.25.....	521.9	418.2	303.7	232.6	163.0	124.2	67.6	38.5	19.8	3.2	500.0

^a The delineation of urban and rural areas, can be difficult for the residential-type areas listed in Table 5.0-3. The degree of resolution in Table 5.0-3 for residential areas often cannot be identified without conducting site area inspections. This process can require extensive analysis, which, for many applications, can be greatly streamlined without sacrificing confidence in selecting the appropriate

urban or rural classification. The fundamental simplifying assumption is based on the premise that many applications will have clear-cut urban/rural designations, i.e., most will be in rural settings that can be definitively characterized through a review of aerial photographs, zoning maps, or U.S. Geological Survey topographical maps.

^b For the distance range 6 to 20 kilometers, generic source number 1 is used to conservatively represent the maximum dispersion coefficient.

^c Exclude all distances that are closer to the facility than the property boundary. For example, if the actual distance to the nearest property boundary is 265 meters, begin at the 300 meter distance in Tables 5.0-4 and 5.0-5.

TABLE 5.0-4.—ISCT PREDICATED MAXIMUM CONCENTRATIONS ($\mu\text{G}/\text{M}^3$)^a FOR HAZARDOUS WASTE COMBUSTORS USING URBAN CONDITIONS—CONTINUED

Distance (KM)	Generic Source #1 (<10M)	Generic Source #2 (10M)	Generic Source #3 (15M)	Generic Source #4 (20M)	Generic Source #5 (25M)	Generic Source #6 (31M)	Generic Source #7 (42M)	Generic Source #8 (53M)	Generic Source #9 (65M)	Generic Source #10 (113M)	Generic Source #11 (Down-wash)
0.30	407.7	351.7	256.2	199.0	147.0	118.3	63.5	41.5	25.0	4.2	389.3
0.35	326.2	304.2	221.6	172.7	130.2	107.9	60.0	40.5	27.3	5.4	311.9
0.40	268.5	268.5	195.6	152.5	115.7	97.1	59.6	37.8	27.4	5.8	268.5
0.45	240.8	240.7	175.4	136.7	103.9	87.6	56.6	37.2	26.3	5.8	240.8
0.50	218.5	218.5	159.2	124.1	94.4	79.7	52.9	36.7	24.7	5.8	218.5
0.55	200.3	200.3	145.9	113.8	86.5	73.1	49.2	35.4	24.5	6.6	200.3
0.60	185.1	185.1	134.9	105.1	80.0	67.6	45.8	33.8	24.3	7.1	185.1
0.65	172.2	172.2	125.5	97.8	74.4	62.9	42.7	32.0	23.7	7.4	172.2
0.70	161.2	161.2	117.4	91.6	69.6	58.9	40.1	30.2	22.9	7.5	161.2
0.75	151.6	151.6	110.5	86.1	65.5	55.4	37.7	28.6	22.0	7.5	151.6
0.80	143.2	143.2	104.4	81.4	61.9	52.3	35.6	27.1	21.1	7.4	143.2
0.85	135.8	135.8	99.0	77.2	58.7	49.6	33.8	25.7	20.2	7.2	135.8
0.90	129.2	129.2	94.2	73.4	55.8	47.2	32.1	24.5	19.3	7.0	129.2
0.95	123.3	123.3	89.9	70.1	53.3	45.0	30.7	23.4	18.5	6.8	123.3
1.00	118.0	118.0	86.0	67.0	51.0	43.1	29.4	22.4	17.7	6.5	118.0
1.10	108.8	108.0	79.3	61.8	47.0	39.7	27.1	20.6	16.4	6.5	108.8
1.20	101.1	101.1	73.7	57.4	43.7	36.9	25.2	19.2	15.2	6.4	101.1
1.30	94.6	94.6	68.9	53.7	40.9	34.5	23.5	18.0	14.2	6.3	94.6
1.40	89.0	89.0	64.8	50.8	38.5	32.5	22.1	16.9	13.4	6.1	89.0
1.50	84.1	84.1	61.3	47.8	36.3	30.7	20.9	16.0	12.7	5.9	84.1
1.60	79.8	79.8	58.2	45.4	34.5	29.2	19.9	15.2	12.0	5.6	79.8
1.70	76.0	76.0	55.4	43.2	32.9	27.8	18.9	14.4	11.4	5.4	76.0
1.80	72.7	72.7	53.0	41.3	31.4	26.5	18.1	13.8	10.9	5.2	72.7
1.90	69.6	69.6	50.7	39.6	30.1	25.4	17.3	13.2	10.5	5.0	69.6
2.00	66.9	66.9	48.8	38.0	28.9	24.4	16.7	12.7	10.1	4.8	66.9
2.25	61.1	61.1	44.5	34.7	26.4	22.3	15.2	11.6	9.2	4.4	61.1
2.50	56.4	56.4	41.1	32.1	24.4	20.6	14.0	10.7	8.5	4.1	56.4
2.75	52.6	52.6	38.3	29.9	22.7	19.2	10.0	10.0	7.9	3.8	52.6
3.00	49.3	49.3	35.9	28.0	21.3	18.0	9.4	9.4	7.4	3.6	49.3
4.00	40.2	40.2	29.3	22.8	17.4	14.7	7.6	7.6	6.1	2.9	40.2
5.00	34.5	34.5	25.2	19.6	14.9	12.6	6.6	6.6	5.2	2.5	34.5
6.00	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7
7.00	27.8	27.8	27.8	37.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8
8.00	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
9.00	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
10.00	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3
15.00	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6
20.00	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0

^a Based on a 1 Gram/Second Emission RateTABLE 5.0-5.—ISCT PREDICATED MAXIMUM CONCENTRATIONS ($\mu\text{G}/\text{M}^3$)^a FOR HAZARDOUS WASTE COMBUSTORS USING URBAN CONDITIONS

Distance (KM)	Generic source #1 (<10M)	Generic source #2 (10M)	Generic source #3 (15M)	Generic source #4 (20M)	Generic source #5 (25M)	Generic source #6 (31M)	Generic source #7 (42M)	Generic source #8 (53M)	Generic source #9 (65M)	Generic source #10 (113M)	Generic source #11 (Down-wash)
0.20	1771.1	670.3	308.6	176.8	102.8	76.5	28.0	10.1	3.5	0.0	1350.8
0.25	1310.6	678.4	316.9	183.6	104.6	71.8	38.0	17.6	7.9	0.2	1227.3
0.30	1002.3	629.2	303.4	199.1	100.4	75.0	39.7	24.0	12.6	0.8	1119.3
0.35	798.4	569.6	282.3	200.7	117.0	71.1	36.3	25.9	16.8	1.9	1023.8
0.40	656.9	516.5	278.7	194.4	125.2	82.7	25.3	24.6	18.1	3.1	938.9
0.45	621.5	471.1	277.6	184.3	127.5	89.7	35.6	21.7	17.6	4.3	851.8
0.50	633.5	432.4	272.0	172.7	125.7	92.9	34.4	21.6	15.9	5.5	787.8
0.55	630.1	399.2	263.8	168.0	121.6	93.3	38.6	22.1	13.6	6.5	730.6
0.60	616.6	370.4	254.0	169.1	116.2	91.8	42.6	21.7	14.3	6.7	676.4
0.65	596.7	345.4	243.6	168.1	110.3	89.2	45.3	20.9	14.7	6.4	633.4
0.70	573.2	323.4	232.9	165.6	104.5	85.8	47.0	23.3	14.6	5.9	592.0
0.75	546.9	304.0	222.3	162.0	98.8	82.2	47.7	25.5	14.3	5.5	554.6
0.80	520.9	286.8	212.1	157.7	98.8	78.5	47.8	27.1	13.8	5.1	522.1
0.85	495.7	271.5	202.4	153.0	99.0	74.9	47.4	28.3	15.0	4.7	491.8
0.90	471.5	257.8	193.3	148.1	98.6	71.4	46.6	29.1	16.3	4.5	464.2
0.95	448.5	245.4	184.7	143.1	97.6	72.3	45.6	29.8	17.3	4.2	438.9
1.00	426.8	234.2	176.8	138.1	96.3	72.6	44.4	29.8	18.2	4.0	415.8
1.10	387.5	214.7	162.5	128.2	91.9	71.1	41.8	29.5	19.3	3.9	375.0
1.20	353.5	198.4	150.3	119.3	87.4	69.1	39.1	28.6	19.8	4.1	340.3
1.30	323.0	189.6	139.9	111.5	82.9	66.7	36.6	27.5	19.8	4.2	310.4
1.40	296.6	182.2	130.8	104.5	78.7	64.2	34.3	26.2	19.5	4.2	284.6
1.50	273.3	174.6	122.9	98.3	74.7	61.6	32.3	24.9	19.0	4.2	262.0
1.60	252.7	167.0	115.9	92.8	71.0	59.1	31.8	23.6	18.4	4.2	242.2

TABLE 5.0-5.—ISCT PREDICATED MAXIMUM CONCENTRATIONS ($\mu\text{G}/\text{M}^3$)^a FOR HAZARDOUS WASTE COMBUSTORS USING URBAN CONDITIONS—CONTINUED

Distance (KM)	Generic source #1 (<10M)	Generic source #2 (10M)	Generic source #3 (15M)	Generic source #4 (20M)	Generic source #5 (25M)	Generic source #6 (31M)	Generic source #7 (42M)	Generic source #8 (53M)	Generic source #9 (65M)	Generic source #10 (113M)	Generic source #11 (Down-wash)
1.70	234.5	159.6	109.7	87.9	67.6	56.7	31.6	22.5	17.7	4.3	224.7
1.80	218.3	152.4	104.1	83.5	64.4	54.3	31.3	21.4	17.0	4.5	211.9
1.90	203.7	145.6	99.1	79.5	61.5	52.1	30.9	20.4	16.3	4.8	198.4
2.00	190.7	139.1	94.6	75.9	58.8	50.0	30.4	19.5	15.7	5.1	186.3
2.25	164.4	124.5	85.1	68.3	53.0	45.4	28.9	18.1	14.2	5.4	160.8
2.50	143.7	112.1	77.3	62.1	48.2	41.4	27.2	17.9	12.9	5.5	140.7
2.75	127.0	101.5	70.9	56.9	38.1	38.1	25.6	17.5	11.8	5.4	124.5
3.00	113.4	92.4	65.6	52.6	35.2	35.2	24.0	17.0	11.2	5.2	112.5
4.00	78.8	67.3	50.6	40.6	27.2	27.2	29.0	14.3	10.4	4.3	78.3
5.00	59.1	54.6	41.4	33.2	22.2	22.2	15.6	12.0	9.3	3.5	58.8
6.00	56.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7
7.00	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4
8.00	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
9.00	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
10.00	9.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
15.00	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
20.00	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9

* Based on a 1 Gram/Second Emission Rate

(B) Determine annual/hourly ratio for rural analysis. The maximum average annual dispersion coefficient is approximated by multiplying the maximum hourly dispersion coefficient (identified in Step 7(A)) by the appropriate ratio selection from Table 5.0-6. The generic source number(s) [from Steps 5(C) or 5(E)], urban/rural designation (from Step 6), and the terrain type are used to select the

appropriate scaling factor. Use the noncomplex terrain designation for all sources located in flat terrain, for all sources where the physical stack height of the worst-case stack is less than or equal to 10 m, for all sources where the worst-case stack is less than the minimum GEP, and for those sources where all of the TAESH values in Step 5(E) are greater than zero. Use the

complex terrain designation in all other situations.

(C) Determine maximum average annual dispersion coefficient. The maximum average annual dispersion coefficient is determined by multiplying the maximum hourly dispersion coefficient (Step 7(A)) by its corresponding annual/hourly ratio (Step 7(B)).

Terrain	Distance from stack (m)	Generic source No.	Maximum hourly dispersion coefficient ($\mu\text{g}/\text{m}^3/\text{g/sec}$)	Annual hourly ratio	Maximum annual dispersion coefficient ($\mu\text{g}/\text{m}^3/\text{g/sec}$) ¹
Flat	0-20.0 0-0.5 >0.5-2.5				
Rolling or Complex	>2.5-5.0 >5.0-20.0				

¹ Maximum hourly dispersion coefficient times annual/hourly ratio.

Step 8: Estimate Maximum Ambient Air Concentrations—see procedures prescribed in subpart H of 40 CFR part 266.

Step 9: Determine Compliance with Regulatory Limits—see procedures prescribed in subpart H of 40 CFR part 266.

Step 10: Multiple Stack Method (Optional)

This option is a special case procedure that may be helpful when (1)

the facility exceeded the regulatory limits for one or more pollutants, as detailed in Step 9, and (2) the facility has multiple stacks with substantially different emission rates and effective release heights. Only those pollutants that fail the Step 9 screening limits need to be addressed in this exercise.

This procedure assesses the environmental impacts from each stack and then sums the results to estimate total impacts. This option is

conceptually the same as the basic approach (Steps 1 through 9) and does not involve complex calculations. However, it is more time-consuming and is recommended only if the basic approach fails to meet the risk criteria. The procedure is outlined below.

(A) Compute effective stack heights for each stack.⁸

⁸ Follow the procedure outlined in Step 4 of the basic screening procedure to determine the GEP for each stack. If a stack's physical height exceeds the

maximum GEP, use the maximum GEP values. If a stack's physical height is less than the minimum GEP, use generic source number 11 in the

subsequent steps of this analysis. Follow the procedure in Steps 5(A) and 5(B) to determine the effective height of each stack.

Stack No.	GEP stack height (m)	Flow rate (m ³ /sec)	Exit temp (°K)	Plume rise (m)	Effective stack height (m)
1.....
2.....
3.....

Add an additional page if more than three stacks are involved. Circle the maximum and minimum effective stack heights.

(B) Determine if this multiple-stack screening procedure will likely produce less conservative results than the procedure in Steps 1 through 9. To do this, compute the ratio of maximum-to-minimum effective stack height:

$$\frac{\text{Maximum Effective Stack Height}}{\text{Minimum Effective Stack Height}} = \underline{\hspace{2cm}}$$

If the above ratio is greater than 1.25, proceed with the remaining steps. Otherwise, this option is less likely to

significantly reduce the degree of conservatism in the screening method.

(C) Determine if terrain adjustment is needed and select generic source numbers. Select the shortest stack height and maximum terrain rise out to 5 km from Step 1 and determine if the facility is in flat terrain.

$$\text{Shortest stack height (m)} = \underline{\hspace{2cm}}$$

$$\text{Maximum terrain rise in meters out to 5 km} = \underline{\hspace{2cm}}$$

$$\frac{\text{Terrain Rise (m)}}{\text{Shortest Stack Height (m)}} \times 100 = \underline{\hspace{2cm}}\%$$

If the value above is greater than 10 percent, the terrain is considered nonflat; proceed to Step 10(D). If the ratio is less than or equal to 10 percent, the terrain is considered flat. Identify the generic source numbers based on effective stack heights computed in Step 10(A). Refer to Table 5.0-2 provided earlier to identify generic source numbers. Record the generic source numbers identified and proceed to Step 10(F).

Generic Source Numbers	Stack No.		
	1	2	3
.....

(D) Compute the TAESH and select generic source numbers (four sources located in nonflat terrain).

1. Compute the TAESH for all remaining stacks using the following equation:

$$\text{HE-TR} = \text{TAESH}$$

where:

HE=effective stack height (m)

TR=maximum terrain rise for each distance range (m)

TAESH=terrain-adjusted effective stack height (m)

USE THE TABLE BELOW TO CALCULATE THE TAESH FOR EACH STACK *

Distance Range (km)	Stack No.								
	0-0.5			>0.5-2.5			>2.5-5.0		
	HE	-	TR	=	TAESH	HE	-	TR	=
1.....
2.....
3.....

* Refer to Step 1 for terrain adjustment data. Note that the distance from the source to the outer radii of each range is used. For example, for the range >0.5-2.5 km, the maximum terrain rise in the range 0.0-2.5 km is used.

For those stacks where the terrain rise within a distance range is greater than the effective stack height (i.e., HE-TR is less than zero), the TAESH for that distance range is set equal to zero, and generic source number 1 should be used for that distance range for all subsequent distance ranges. Additionally, for all stacks with a physical stack height of less than or equal to 10 meters, use generic source number 1 for all distance ranges.¹⁰ For

the remaining stacks, proceed to Step 10(D)(2).

2. For the remaining stacks, refer to Table 5.0-2 and, for each distance range, identify the generic source number that includes the TAESH. Use the values obtained from Steps 10(D)(1) and 10(D)(2) to complete the following summary worksheet;

GENERIC SOURCE NUMBER AFTER TERRAIN ADJUSTED (IF NEEDED)

Stack No.	0-0.5 km	>0.5-2.5 km	>2.5-5.0 km
1.....
2.....
3.....

(E) Identify maximum average hourly dispersion coefficients. Based on the land use classification of the site (e.g., urban or rural), use either Table 5.0-4 or Table 5.0-5 to determine the appropriate

¹⁰ This applies to all stacks less than or equal to 10 meters regardless of the terrain classification.

dispersion coefficient for each distance range for each stack. Begin at the minimum fenceline distance indicated in Step 7(B) and record on Worksheet 5.0-1 the dispersion coefficient for each stack/distance range. For stacks located in facilities in flat terrain, the generic source numbers were computed in Step 10(C). For stacks located in facilities in

rolling and complex terrain, the generic source numbers were computed in Step 10(D). For flat terrain applications and for stacks with a physical height of less than or equal to 10 meters, only one generic source number is used per stack for all distance ranges. For other situations up to three generic source numbers may be needed per stack (i.e., a

unique generic source number per distance range). In Tables 5.0-4 and 5.0-5, the dispersion coefficients for distances of 6 km to 20 km are the same for all generic source numbers in order to conservatively represent terrain beyond 5 km (past the limits of the terrain analysis).

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Worksheet 5.0-1 Dispersion Coefficient by Downwind Distance¹

Distance	Stack 1	Stack 2	Stack 3
0.20			
0.25			
0.30			
0.35			
0.40			
0.45			
0.50			
0.55			
0.60			
0.65			
0.70			
0.75			
0.80			
0.85			
0.90			
0.95			
1.00			
1.10			
1.20			
1.30			
1.40			
1.50			
1.60			
1.70			
1.80			
1.90			
2.00			
2.25			
2.50			
2.75			
3.00			
4.00			
5.00			
6.00			
7.00			
8.00			
9.00			
10.00			
15.00			
20.00			

¹Note: This procedure places all stacks at the same point, but allows for consideration of different effective stack heights. The distance to the closest boundary (extracted from Step 1) should be the closest distance to any stack.

(F) Estimate maximum hourly ambient air concentrations. In this step, pollutant-specific emission rates are multiplied by appropriate dispersion coefficients to estimate ambient air concentrations. For each stack,

emissions are multiplied by the dispersion coefficient selected in Step 10(E) and summed across all stacks to estimate ambient air concentrations at various distances from the facility. From these summed concentrations, the

maximum hourly ambient air concentration is selected. First, select the maximum emission rate of the pollutant.¹¹ Record these data in the spaces provided below.¹²

MAXIMUM ANNUAL EMISSION RATES (G/SEC)

Pollutant	Stack 1	Stack 2	Stack 3

Complete a separate copy of Worksheet 5.0-2 for each pollutant and select the highest hourly concentration from the summation column at the far right of the worksheet. Record the maximum hourly air concentration for each pollutant analyzed (add additional lines if needed):

Pollutant	Maximum hourly air concentration

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Worksheet 5.0-2 Maximum Hourly Ambient Air Concentration

Pollutant

Total Distance (km)	Summed Concentration from all Stacks		
	Stack 1 ER x DC = C	Stack 2 ER x DC = C	Stack 3 ER x DC = C
0.20	x	-	x
0.25	x	x	x
0.30	x	x	x
0.35	x	x	x
0.40	x	x	x
0.45	x	x	x
0.50	x	x	x
0.55	x	x	x
0.60	x	x	x
0.65	x	x	x
0.70	x	x	x
0.80	x	x	x
0.85	x	x	x
0.90	x	x	x
0.95	x	x	x
1.00	x	x	x
1.10	x	x	x
1.20	x	x	x
1.30	x	x	x
1.40	x	x	x
1.50	x	-	x

ER= Annual Average Emission Rate

DC= Hourly Dispersion Coefficient (from Worksheet 5.0-1)

C= Estimated Maximum Hourly Ambient Air Concentration

Worksheet 5.0-2 Maximum Hourly Ambient Air Concentration

Pollutant _____

Total Distance (km)	Summed Concentration from all Stacks		
	Stack 1 ER x DC = C	Stack 2 ER x DC = C	Stack 3 ER x DC = C
1.60	x	-	x
1.70	x	x	x
1.80	x	x	x
1.90	x	x	x
2.00	x	x	x
2.25	x	x	x
2.50	x	x	x
2.75	x	x	x
3.00	x	x	x
4.00	x	x	x
5.00	x	x	x
6.00	x	x	x
7.00	x	x	x
8.00	x	x	x
9.00	x	x	x
10.00	x	x	x
15.00	x	x	x
20.00	x	x	x

ER=Annual Average Emission Rate
DC= Hourly Dispersion Coefficient (from Worksheet 5.0-1)
C= Estimated Maximum Hourly Ambient Air Concentration

Worksheet 5.0-2 Maximum Ambient Air Concentration

Pollutant _____

Total Distance (km)	Stack 1 ER x DC = C	Stack 2 ER x DC = C	Stack 3 ER x DC = C	Summed Concentration from all Stacks
1.60	x	x	x	
1.70	x	x	x	
1.80	x	x	x	
1.90	x	x	x	
2.00	x	x	x	
2.25	x	x	x	
2.50	x	x	x	
2.75	x	x	x	
3.00	x	x	x	
4.00	x	x	x	
5.00	x	x	x	
6.00	x	x	x	
7.00	x	x	x	
8.00	x	x	x	
9.00	x	x	x	
10.00	x	x	x	
15.00	x	x	x	
20.00	x	x	x	

ER = Annual average emission rate

DC = Hourly dispersion coefficient (from Worksheet 1)
C = Estimated maximum hourly ambient air concentration

(G) Determine the complex/noncomplex designation for each stack. For each stack, subtract the maximum terrain rise within 5 km of the site from the physical stack height and designate the stack as either complex or noncomplex. If the stack height minus

the maximum terrain rise (within 5 km) is greater than zero or if the stack is less than 10 meters in physical height, then assign the stack a noncomplex designation. If the stack height minus the maximum terrain rise (within 5 km)

is less than or equal to zero, then assign the stack a complex designation.

Perform the following computation for each stack and record the information in the spaces provided. Check in the spaces provided whether the stack designation is complex or noncomplex.

Stack No.	Stack height (m)	Maximum terrain rise (m)	Complex	Noncomplex
1.....	-.....	=.....(m)		
2.....	-.....	=.....(m)		
3.....	-.....	=.....(m)		

(H) Identify annual/hourly ratios. Extract the annual/hourly ratios for each stack by referring to Table 5.0-6. Generic source numbers (from Steps

10(C) or 10(D), urban/rural designation (from Step 6)), and complex or noncomplex terrain designations (from Step 10(G)) are used to select the

appropriate scaling factor needed to convert hourly maximum concentrations to estimates of annual average concentrations.

Complete the following table:¹³

¹³If any stack (excluding generic stack number 1 and 11) in Step 10(D) shows a negative terrain adjusted stack height, use the complex terrain annual/hourly ratios.

Stack No.	Generic source No. steps 10 (C or D)			Annual/hourly ratio (from table 5.0-6)		
	Distance ranges (km)			Distance ranges (km)		
	0-0.5	>0.5-2.5	>2.5-5.0	0-0.5	>0.5-2.5	>2.5-5.0
1.....						
2.....						
3.....						

(I) Select the highest annual/hourly ratio among all of the stacks,¹⁴ and then estimate the maximum annual average ambient air concentrations for each pollutant by completing the following table, where:

¹⁴As an option, the user can identify the stack with the highest ratio for each distance range (rather than the absolute highest). In this case, extra sheets would be needed to show estimated annual average concentrations from each stack by multiplying emission rate times maximum hourly dispersion coefficient times maximum annual/hourly ratio for applicable distance range. Then sum across all stacks for each downwind distance.

C=Maximum total hourly ambient air concentration ($\mu\text{g}/\text{m}^3$) for pollutant "N" from Step 10(F).

C_a =Maximum annual average air concentration for pollutant "N" ($\mu\text{g}/\text{m}^3$). R=Annual/hourly ratio.

TABLE 5.0-6.—95TH PERCENTILE OF ANNUAL/HOURLY RATIOS

Source	Noncomplex Terrain		Source	Complex Terrain	
	Urban	Rural		Urban	Rural
1.....	0.019	0.014	1.....	0.020	0.053
2.....	0.033	0.019	2.....	0.020	0.053
3.....	0.031	0.018	3.....	0.030	0.057
4.....	0.029	0.017	4.....	0.051	0.047
5.....	0.028	0.017	5.....	0.067	0.039
6.....	0.028	0.017	6.....	0.059	0.034
7.....	0.031	0.015	7.....	0.036	0.031
8.....	0.030	0.013	8.....	0.026	0.024
9.....	0.029	0.011	9.....	0.026	0.024
10.....	0.029	0.008	10.....	0.017	0.013
11.....	0.018	0.015	11.....	0.020	0.053

Pollutant	$C_a (\mu\text{g}/\text{m}^3) \times R = C_s (\mu\text{g}/\text{m}^3)$
	— × — = —

(J) Use the maximum annual average concentrations from Step 10(I) to determine compliance with regulatory requirements.

SECTION 6.0—SIMPLIFIED LAND USE CLASSIFICATION PROCEDURE FOR COMPLIANCE WITH TIER I AND TIER II LIMITS

6.1 Introduction

This section provides a simplified procedure to classify areas in the vicinity of boilers and industrial furnace sites as urban or rural in order to set risk-based emission limits under subpart H of 40 CFR part 266. Urban/rural classification is needed because dispersion rates differ between urban and rural areas and thus, the risk per unit emission rate differs accordingly. The combination of greater surface roughness (more buildings/structures to generate turbulent mixing) and the greater amount of heat released from the surface in an urban area (generates buoyancy-induced mixing) produces greater rates of dispersion. The emission limit tables in the regulation, therefore, distinguish between urban and rural areas.

EPA guidance (EPA 1986) provides two alternative procedures to determine whether the character of an area is predominantly urban or rural. One procedure is based on land use typing and the other is based on population density. Both procedures require consideration of characteristics within a 3-km radius from a source, in this case the facility stack(s). The land use typing method is preferred because it more directly relates to the surface characteristics that affect dispersion rates. The remainder of this discussion is, therefore, focused on the land use method.

While the land use method is more direct, it can also be labor-intensive to apply. For this discussion, the land use method has been simplified so that it is consistent with EPA guidance (EPA 1986; Auer 1978), while streamlining the process for the majority of applications so that a clear-cut decision can be made without the need for detailed

analysis. Table 6.0-1 summarizes the simplified approach for classifying areas as urban or rural. As shown, the applicant always has the option of applying standard (i.e., more detailed) analyses to more accurately distinguish between urban and rural areas. However, the procedure presented here allows for simplified determinations, where appropriate, to expedite the permitting process.

TABLE 6.0-1.—CLASSIFICATION OF LAND USE TYPES

Type ¹	Description	Urban or rural designation ²
I1	Heavy Industrial.....	Urban.
I2	Light/Moderate Industrial.	Urban.
C1	Commercial.....	Urban.
R1	Common Residential (Normal Easements).	Rural.
R2	Compact Residential (Single Family).	Urban.
R3	Compact Residential (Multi-Family).	Urban.
R4	Estate Residential (Multi-Acre Plots).	Rural.
A1	Metropolitan Natural ...	Rural.
A2	Agricultural	Rural.
A3	Undeveloped (Grasses/Weeds).	Rural.
A4	Undeveloped (Heavily Wooded).	Rural.
A5	Water Surfaces.....	Rural.

¹ EPA, Guideline on Air Quality Models (Revised), EPA-450/2-78-027, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, July, 1986.

² Auer, August H. Jr., "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, pp. 636-643, 1978.

6.2 Simplified Land Use Process

The land use approach considers four primary land use types: industrial (I), commercial (C), residential (R), and agricultural (A). Within these primary classes, subclasses are identified, as shown

in table 6.0-1. The goal is to estimate the percentage of the area within a 3-km radius that is urban type and the percentage that is rural type. Industrial and commercial areas are classified as urban; agricultural areas are classified as rural.

The delineation of urban and rural areas, however, can be more difficult for the residential type areas shown in table 6.0-1. The degree of resolution shown in table 6.0-1 for residential areas often cannot be identified without conducting site area inspections and/or referring to zoning maps. This process can require extensive analysis, which, for many applications, can be greatly streamlined without sacrificing confidence in selecting the appropriate urban or rural classification.

The fundamental simplifying assumption is based on the premise that many applications will have clear-cut urban/rural designations, i.e., most will be in rural settings that can be definitively characterized through a brief review of topographical maps. The color coding on USGS topographical maps provides the most effective means of simplifying the typing scheme. The suggested typing designations for the color codes found on topographical maps are as follows:

Green Wooded areas (rural).

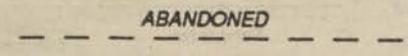
White White areas generally will be treated as rural. This code applies to areas that are unwooded and do not have densely packed structures which would require the pink code (house omission tint). Parks, industrial areas, and unforested rural land will appear as white on the topographical maps. Of these categories, only the industrial areas could potentially be classified as urban based on EPA 1986 or Auer 1978. Industrial areas can be easily identified in most cases by the characteristics shown in Figure 6.0-1. For this simplified procedure, white areas that have an industrial classification will be treated as urban areas.

Figure 6.0-1
Supplementary Publication Symbols

- 117 Single track
Line weight .005". Tie weight .003", length .04", spaced .20" center to center.



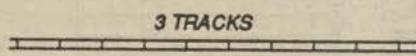
- 118 Single track abandoned
Same as existing track with space .02", dash .18". Label.



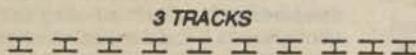
- 119 Single track under construction
Same as existing track with space .02", dash .38". Label UNDER CONSTRUCTION.



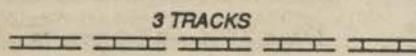
- 120 Multiple main line track
Overall width .017". Line weight .003". Tie length .052", spaced .20" center to center. If more than two tracks label with double cross tie at point of change. Double cross tie .017" overall width.



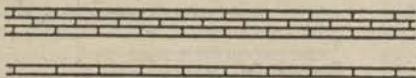
- 121 Multiple track abandoned
Same as existing track with space .02", dash .18". Label ABANDONED.



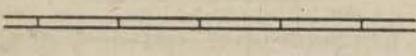
- 122 Multiple track under construction
Same as existing track with space .02", dash .38". Label UNDER CONSTRUCTION.



- 123 Juxtaposition
Alternate ties, spaced .20" center to center. Minimum space between tracks .011". Line weight for single tracks .005", multiple tracks .003".



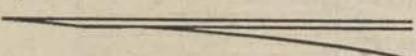
- 124 Railroad in street
Ties spaced .20" center to center. Label if narrow gage. Tie weight .003".



- 125 Yards
Line weight .003". Space between tracks .011". Ties spaced .20" center to center, maximum length to touch 6 tracks.



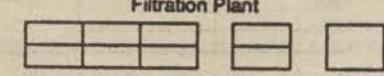
- 126 Sidings
Line weight .003". Scribe to scale with minimum space between tracks .011". Ties spaced .20" center to center, length .04" for single track.



- 176 Large buildings
Outline weight .003". When width exceeds .06", hatch at 45° angle to building in NE direction, lines .002" spaced .02" center to center.



- 178 Sewage disposal or filtration plant
Line weight .003". See symbol 700 for blue hatching. Label.



- 196 Tanks: oil, gas, water, etc.
Circle .03" minimum, 10" maximum. Label as to content.



- 197 Tanks: oil, gas, water, etc.
Exceeding 10" diameter. Outline weight .003". Hatch SW-NE with .002" lines spaced .02" center to center. Label as to content.



SECTION 7.0 STATISTICAL METHODOLOGY FOR BEVILL RESIDUE DETERMINATIONS

This section describes the statistical comparison of waste-derived residue to normal residue for use in determining eligibility for the Bevill exemption under 40 CFR 266.112.

7.1 Comparison of Waste-derived Residue with Normal Residue

To meet the special criteria under § 266.112(b)(1), waste-derived residue must not contain appendix VIII, Part 261, constituents (toxic constituents) at concentrations significantly higher than in residue generated without burning or processing hazardous waste. Concentrations of toxic constituents in normal residue are determined based on analysis of a minimum of 10 composite samples. (Note that "normal" residue refers to residue generated by a facility when operating without burning hazardous waste.) The 95th percent confidence interval about the mean of the normal residue concentrations must be used in the comparison of waste-derived residue with normal residue; the confidence interval is determined as described in section 7.2 below. The concentration of a toxic constituent in the waste-derived residue is not considered to be significantly higher than in the normal residue if the concentration in the waste-derived residue does not exceed the upper 95th percent confidence interval about the mean that was established for the normal residue. Concentrations of toxic constituents in waste-derived residue are determined based on analysis of samples taken over a compositing period of not more than 24 hours.

7.2. Calculation of the 95th Percent Confidence Interval About the Mean for Toxic Constituents in Normal Residue

The 95th percent confidence interval about the mean is calculated for a set of values using a "t" distribution. In use of the "t" distribution, it is assumed that the values are normally distributed; the "t" distribution is applicable for use with small sample sets (i.e. approximately 10-30 samples). The 95th percent confidence interval about the mean is determined using the following equation:

$$\text{95th percent confidence interval} = \bar{X} t_{\alpha/2} (s/\sqrt{n})$$

where \bar{X} = mean of the normal residue concentrations,

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n}$$

α = the level of significance = 0.05,
 s = standard deviation of the normal residue concentrations,

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2}^{1/2}$$

and
 n = sample size.

The values of the "t" distribution at the α level of significance and $n-1$ degrees of freedom are given in table 7.0-1.

For example, a normal residue test results in 10 samples with the following analysis results for toxic compound A:

Sample No.	Concentration of compound A (ppm)
1	10
2	10
3	15
4	10
5	7
6	12
7	10
8	16
9	15
10	10

The mean and standard deviation of these measurements, calculated using equations above, are 11.5 and 2.9 respectively. Assuming that the values are normally distributed, the upper 95th percent confidence interval value about the mean is given by:

TABLE 7.0-1.—T DISTRIBUTION VALUES

Degrees of freedom (n-1)	Percentage point of t distribution $\alpha/2 = 0.025$
1	12.706
2	4.303
3	3.182
4	2.776
5	2.571
6	2.447
7	2.365
8	2.306
9	2.262
10	2.228
11	2.201
12	2.179
13	2.160
14	2.145
15	2.131
16	2.120
17	2.110
18	2.101
19	2.093
20	2.086
21	2.080
22	2.074
23	2.069
24	2.064
25	2.060
26	2.056
27	2.052
28	2.048
29	2.045

95th percent confidence interval
 $\text{value} = 11.5 + 2.262 \times (2.9\sqrt{10}) = 13.6 \text{ ppm}$.

Thus, if the concentration of compound A in the waste-derived residue is below 13.6 ppm, then the waste-derived residue is eligible for the Bevill exemption for toxic compound A.

7.3 Normal Distribution Assumption

As noted in section 7.2 above, this statistical approach (use of the 95th percent confidence interval about the mean) for calculation of the concentration in normal

residue is based on the assumption that the concentration data are distributed normally. The Agency is aware that concentration data of this type may not be distributed normally, particularly when concentrations are near the detection limits. There are a number of procedures that can be used to test the distribution of a data set. For example, the Shapiro-Wilk test, examination of a histogram or plot of the data on normal probability paper, and examination of the coefficient of skewness are methods that may be applicable, depending on the nature of the data (Reference 1 and 2).

If the concentration data are not adequately represented by a normal distribution, the data may be transformed to attain a near normal distribution. The Agency has found that concentration data, especially when near detection levels, often exhibit a lognormal distribution. The assumption of a lognormal distribution has been used in various programs at EPA, such as in the Office of Solid Waste Land Disposal Restrictions program for determination of BDAT treatment standards. The transformed data may be tested for normality using the procedures identified above. If the transformed data are better represented by a normal distribution than the untransformed data, the transformed data should be used in determining the 95th percent confidence interval using the procedures in section 7.2 above.

In all cases where the applicant for the Bevill exemption wishes to use other than an assumption of normally distributed data, or believes that use of an alternate statistical approach is appropriate to the specific data set, the applicant must provide supporting rationale and demonstrate to the Director or permitting authority that the data treatment is based upon sound statistical practice.

7.4 Nondetect Values

The Agency is developing guidance regarding the treatment of nondetect values (data where the concentration of the constituent being measured is below the lowest concentration for which the analytical method is valid) in carrying out the statistical determinations described above. Until the guidance information is available, facilities may present their own approach to the handling of nondetect data points, but must provide supporting rationale in the operating record for consideration by the Director or permitting authority.

7.5 References

- Shapiro, S.S. and Wilk, M.B. (1965), "An Analysis of Variance Test for Normality (complete samples)," *Biometrika*, 591-611.
- Bhattacharyya, G.K. and R.A. Johnson (1977), *Statistical Concepts and Methods*, John Wiley and Sons, New York.

SECTION 8.0 PROCEDURES FOR DETERMINING DEFAULT VALUES FOR AIR POLLUTION CONTROL SYSTEM REMOVAL EFFICIENCIES

During interim status, owners or operators of boilers and industrial furnaces burning hazardous waste must submit documentation to EPA that certifies that emissions of HCl,

Cl_2 , metals, and particulate matter (PM) are not likely to exceed allowable emission rates. See certification of precompliance under 40 CFR 266.103(b). This documentation also establishes interim status feed rate and operating limits for the facility. For the initial certification, estimates of emissions and system removal efficiencies (SREs) can be made to establish the operating limits. Subsequently, owners or operators must use emissions testing to demonstrate that emissions do not exceed allowable levels, and to establish operating limits. See 40 CFR 266.103(c). However, initial estimates of emissions for certification of precompliance can be based on estimated or established SREs.

The SRE combines the effect of partitioning of the chlorine, metals, or PM and the air pollution control system removal efficiency (APCS RE) for these pollutants. The SRE is defined as:

$$\text{SRE} = (\text{species input} - \text{species emitted}) / \text{species input}$$

The SRE can be calculated from the partitioning factor (PF) and APCS RE by the following formula:

$$\text{SRE} = 1 - [(\text{PF}/100) \times (1 - \text{APCS RE}/100)]$$

where:

PF=percentage of the pollutant partitioned to the combustion gas

Estimates of the PF and/or the APCS RE can be based on either EPA's default values or engineering judgement. EPA's default values for the APCS RE for metals, HCl, Cl_2 , and PM are described in this section. EPA's default values for partitioning of these pollutants are described in section 9.0.

Guidelines for the use of engineering judgement to estimate APCS REs or PFs are described in section 9.4.

8.1 APCS RE Default Values for Metals

EPA's default assumptions for APCS RE for metals are shown in Table 8.1-1. The default values in the table are conservative estimates of the removal efficiencies for metals in BIFs, depending on the volatility of the metal and the type of APCS.

The volatility of a metal depends on the temperature, the thermal input, the chlorine content of the waste, and the identity and concentration of the metal. Metals that do not vaporize at combustion zone temperatures are classified as "nonvolatile". Such metals typically enter the APCS in the form of large particles that are removed relatively easily. Metals that vaporize in the combustion zone and condense before entering the APCS are classified as "volatile". Such metals typically enter the APCS in the form of very fine, submicron particles that are rather inefficiently removed in many APCSs. Metals that vaporize in the combustion zone and do not condense before entering the APCS are classified as "very volatile". Such metals enter the APCS in the form of a vapor that is very inefficiently removed in many APCSs.

Typically, BIFs have combustion zone temperatures high enough to vaporize any hazardous metal at concentrations sufficient to exceed risk-based emission limits. For this reason, the default assumption is that there are no nonvolatile metals. Tables 8.1-2 and 8.1-3 are used to determine whether metals are classified as "volatile" or "very volatile" depending on the temperature entering the

APCS, the thermal input, and whether the waste is chlorinated or nonchlorinated.

TABLE 8.1-1.—AIR POLLUTION CONTROL SYSTEMS (APCS) AND THEIR CONSERVATIVELY ESTIMATED EFFICIENCIES FOR CONTROLLING TOXIC METALS (%)

APCS	Metal Volatility		
	Nonvolatile	Volatile	Very Volatile
WS	40	30	20
VS-20	80	75	20
VS-60	87	75	40
ESP-1	90	75	0
ESP-2	92	80	0
ESP-4	95	80	0
WESP	90	85	40
FF	90	80	0
SD/FF	97	90	0
DS/FF	95	90	0
IWS	90	87	75

WS=Wet Scrubber including: Sieve Tray Tower, Packed Tower, Bubble Cap Tower

VS-20=Venturi Scrubber, ca. 20-30 in W.G.

Δp

VS-60=Venturi Scrubber, ca. >60 in W.G. Δp

ESP-1=Electrostatic Precipitator; 1 stage

ESP-2=Electrostatic Precipitator; 2 stage

ESP-4=Electrostatic Precipitator; 4 stage

IWS=Ionizing Wet Scrubber

DS=Dry Scrubber

FF=Fabric Filter (Baghouse)

SD=Spray Dryer (Wet/Dry Scrubber)

WESP=Wet Electrostatic Precipitator

TABLE 8.1-2.—TEMPERATURE (F) ENTERING APCS ABOVE WHICH METALS ARE CLASSIFIED AS VERY VOLATILE IN COMBUSTION OF NONCHLORINATED WASTES

Metal	Name	Symbol	Thermal Input (MMBtu/hr) ¹				
			1	10	100	1000	10000
Arsenic		As	320	280	240	200	160
Cadmium		Cd	1040	940	860	780	720
Chromium		Cr	2000	1760	1580	1420	1380
Beryllium		Be	1680	1440	1240	1080	980
Antimony		Sb	680	600	540	480	420
Barium		Ba	2240	1820	1540	1360	1240
Lead		Pb	1280	1180	1080	1000	920
Mercury		Hg	340	300	260	220	180
Silver		Ag	1820	1640	1480	1340	1220
Thallium		Tl	900	800	700	620	540

¹ Interpolation of thermal input is not allowed. If a BIF fires between two ranges, the APCS temperature under the higher thermal input must be used. Example: For a BIF firing 10-100 MMBtu/hr, Mercury is considered very volatile at APCS temperatures above 260 F and volatile at APCS temperatures of 260 F and below.

TABLE 8.1-3.—TEMPERATURE (F) ENTERING APCS ABOVE WHICH METALS ARE CLASSIFIED AS VERY VOLATILE IN COMBUSTION OF CHLORINATED WASTES

Metal	Name	Symbol	Thermal Input (MMBtu/hr) ¹				
			1	10	100	1000	10000
Arsenic		As	320	280	240	200	160
Cadmium		Cd	1040	940	860	780	720
Chromium		Cr	>140	>140	>140	>140	>140
Beryllium		Be	1680	1440	1240	1080	980
Antimony		Sb	680	600	540	480	420
Barium		Ba	2060	1840	1680	1540	1420
Lead		Pb	>140	>140	>140	>140	>140
Mercury		Hg	340	300	260	220	180

TABLE 8.1-3.—TEMPERATURE (F) ENTERING APCS ABOVE WHICH METALS ARE CLASSIFIED AS VERY VOLATILE IN COMBUSTION OF CHLORINATED WASTES—Continued

Metal Name	Symbol	Thermal Input (MMBtu/hr) ¹				
		1	10	100	1000	10000
Silver.....	Ag	1080	940	840	740	660
Thallium.....	Tl	900	800	700	620	540

¹ Interpolation of thermal input is not allowed. If a BIF fires between two ranges, the APCS temperature under the higher thermal input must be used. Example: For a BIF firing 10–100 MMBtu/hr, Mercury is considered very volatile at APCS temperatures above 260 F and volatile at APCS temperatures of 260 F and below.

A waste is considered chlorinated if chlorine is present in concentrations greater than 0.1 percent by weight. In the EPA guidance document "Guidance for Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators, Volume IV of the Hazardous Waste Incineration Guidance Series," (1) one percent is used for the chlorinated/nonchlorinated cutoff. However, best engineering judgement, based on examination of pilot-scale data reported by Carroll et al. (2) on the effects of waste chlorine content on metals emissions, suggests that the 1 percent cutoff may not be sufficiently conservative.

Tables 8.1-2 and 8.1-3 were compiled based on equilibrium calculations. Metals are classified as very volatile at all temperatures above the temperature at which the vapor pressure of the metal is greater than 10 percent of the vapor pressure that results in emissions exceeding the most conservative risk-based emissions limits.

8.2 APCS RE Default Values for HCl and Cl₂

Default assumptions for APCS RE for HCl in BIFs are shown in Table 8.2-1. This table is identical to the column for other BIFs except that cement kilns have a minimum HCl removal efficiency of 83 percent. Because of the alkaline nature of the raw materials in cement kilns, most of the chlorine is converted to chloride salts. Thus, the minimum APCS RE for HCl for cement kilns is independent of the APCS train.

Removal efficiency of Cl₂ for most types of APCS is generally minimal. Therefore, the default assumption for APCS RE for Cl₂ for all APCSs is 0 percent. This is applicable to all BIFs, including cement kilns.

8.3 APCS RE Default Values for Ash

Default assumptions for APCS RE for PM are also shown in Table 8.1-4. These figures are conservative estimates of PM removal efficiencies for different types of APCSs. They are identical to the figures in the Nonvolatile APCS RE column for hazardous metals presented in Table 8.1-1 because the same collection mechanisms and collection efficiencies that apply to nonvolatile metals also apply to PM.

TABLE 8.2-1.—AIR POLLUTION CONTROL SYSTEMS (APCS) AND THEIR CONSERVATIVELY ESTIMATED EFFICIENCIES FOR REMOVING HYDROGEN CHLORIDE (HCl) AND PARTICULATE MATTER (PM) (%)

APCD	HCl		
	Cement kilns	Other BIFs	PM
WS.....	97	97	40
VS-20.....	97	97	80
VS-60.....	98	98	87
ESP-1.....	83	0	90
ESP-2.....	83	0	92
ESP-4.....	83	0	95
WESP.....	83	70	90
FF.....	83	0	90
SD/FF.....	98	98	97
DS/FF.....	98	98	95
WS/IWS.....	99	99	95
IWS.....	99	99	90

WS=Wet Scrubber including: Sieve Tray Tower, Packed Tower, Bubble Cap Tower

PS=Proprietary Wet Scrubber Design (A number of proprietary wet scrubbers have come on the market in recent years that are highly efficient on both particulates and corrosive gases. Two such units are offered by Calvert Environmental Equipment Co. and by Hydro-Sonic Systems, Inc.).

VS-20=Venturi Scrubber, ca. 20–30 in W.G. Ap

VS-60=Venturi Scrubber, ca. >60 in W.G. Ap

ESP-1=Electrostatic Precipitator; 1 stage

ESP-2=Electrostatic Precipitator; 2 stage

ESP-4=Electrostatic Precipitator; 4 stage

IWS=Ionizing Wet Scrubber

DS=Dry Scrubber

FF=Fabric Filter (Baghouse)

SD=Spray Dryer (Wet/Dry Scrubber)

8.4 References

- U.S. Environmental Protection Agency. "Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators," Office of Solid Waste, Washington, D.C., August 1989.
- Carroll, G.J., R.C. Thurnau, R.E. Maunighan, L.R. Waterland, J.W. Lee, and D.J. Fournier. The Partitioning of Metals in Rotary Kiln Incineration. Proceedings of the Third International Conference on New Frontiers for Hazardous Waste Management. NTIS Document No. EPA/600/9-89/072, p. 555 (1989).

SECTION 9.0 PROCEDURES FOR DETERMINING DEFAULT VALUES FOR PARTITIONING OF METALS, ASH, AND TOTAL CHLORIDE/CHLORINE

Pollutant partitioning factor estimates can come from two sources: default assumptions or engineering judgement. EPA's default assumptions are discussed below for metals, HCl, Cl₂, and PM. The default assumptions are used to conservatively predict the partitioning factor for several types of BIFs. Engineering judgement-based partitioning factor estimates are discussed in section 9.4.

9.1 Partitioning Default Value for Metals

To be conservative, the Agency is assuming that 100 percent of each metal in each feed stream is partitioned to the combustion gas. Owners/operators may use this default value or a supportable, site-specific value developed following the general guidelines provided in section 9.4.

9.2 Special Procedures for Chlorine, HCl, and Cl₂

The Agency has established the special procedures presented below for chlorine because the emission limits are based on the pollutants HCl and Cl₂ formed from chlorine fed to the combustor. Therefore, the owner/operator must estimate the controlled emission rate of both HCl and Cl₂ and show that they do not exceed allowable levels.

1. The default partitioning value for the fraction of chlorine in the total feed streams that is partitioned to combustion gas is 100 percent. Owners/operators may use this default value or a supportable, site-specific value developed following the general guidelines provided in section 9.4.

2. To determine the partitioning of chlorine in the combustion gas to HCl versus Cl₂, either use the default values below or use supportable site-specific values developed following the general guidelines provided in section 9.4.

- For BIFs excluding halogen acid furnaces (HAFs), with a total feed stream chlorine/hydrogen ratio ≥ 0.95 , the default partitioning factor is 20 percent Cl₂, 80 percent HCl.

- For HAFs and for BIFs with a total feed stream chlorine/hydrogen ratio > 0.95 , the default partitioning factor is 100 percent Cl₂.

3. To determine the uncontrolled (i.e., prior to acid gas APCS) emission rate of HCl and Cl₂, multiply the feed rate of chlorine times the partitioning factor for each pollutant. Then, for HCl, convert the chlorine emission rate to HCl by multiplying it by the ratio of the molecular weight of Cl to the molecular

weight of HCl (i.e., 35.5/36.5). No conversion is needed for Cl₂.

9.3 Special Procedures for Ash

This section: (1) Explains why ash feed rate limits are not applicable to cement and light-weight aggregate kilns; (2) presents the default partitioning values for ash; and (3) explains how to convert the 0.08 gr/dscf, corrected to 7% O₂, PM emission limit to a PM emission rate.

Waiver for Cement and Light-Weight Aggregate Kilns. For cement kilns and light-weight aggregate kilns, raw material feed streams contain the vast majority of the ash input, and a significant amount of the ash in the feed stream is entrained into the kiln exhaust gas. For these devices, the ash content of the hazardous waste stream is expected to have a negligible effect on total ash emissions. For this reason, there is no ash feed rate compliance limit for cement kilns or light-weight aggregate kilns. Nonetheless, cement kilns and light-weight aggregate kilns are required to initially certify that PM emissions are not likely to exceed the PM limit, and subsequently, certify through compliance testing that the PM limit is not exceeded.

Default Partitioning Value for Ash. The default assumption for partitioning of ash depends on the feed stream firing system. There are two methods by which materials may be fired into BIFs: Suspension-firing and bed-firing.

The suspension category includes atomized and lanced pumpable liquids and suspension-fired pulverized solids. The default partitioning assumption for materials fired by these systems is that 100 percent of the ash partitions to the combustion gas.

The bed-fired category consists principally of stoker boilers and raw materials (and in some cases containerized hazardous waste) fed into cement and light-weight aggregate kilns. The default partitioning assumption for materials fired on a bed is that 5 percent of the ash partitions to the combustion gas.

Converting the PM Concentration-Based Standard to a PM Mass Emission Rate. The emission limit for BIFs is 0.08 gr/dscf, corrected to 7% O₂, unless a more stringent standard applies [e.g., a New Source Performance Standard (NSPS) or a State standard implemented under the State Implementation Plan (SIP)]. To convert the 0.08 gr/dscf standard to a PM mass emission rate:

1. Determine the flue gas O₂ concentration (percent by volume, dry) and flue gas flow rate (dry standard cubic feet per minute); and
2. Calculate the allowable PM mass emission rate by multiplying the concentration-based PM emission standard times the flue gas flow rate times a dilution correction factor equal to [(21-O₂) concentration from step 1]/(21-7)].

9.4 Use of Engineering Judgement To Estimate Partitioning and APICS RE Values

Engineering judgement may be used in place of EPA's conservative default assumptions to estimate partitioning and APICS RE values provided that the engineering judgement is defensible and properly documented. To properly document engineering judgement, the owner/operator must keep a written record of all assumptions and calculations necessary to justify the APICS RE used. The owner/operator must provide this record to the Director upon request and must be prepared to defend the assumptions and calculations used.

If the engineering judgement is based on emissions testing, the testing will often document the emission rate of a pollutant relative to the feed rate of that pollutant rather than the partitioning factor or APICS RE.

Examples of situations where the use of engineering judgement may be supportable to estimate a partitioning factor, APICS RE, or SRE include:

- Using emissions testing data from the facility to support an SRE, even though the testing may not meet full QA/QC procedures (e.g., triplicate test runs). The closer the test results conform with full QA/QC procedures and the closer the operating conditions during the test conform with the established operating conditions for the facility, the more supportable the engineering judgement will be.
- Applying emissions testing data documenting an SRE for one metal, including nonhazardous surrogate metals to another less volatile metal.
- Applying emissions testing data documenting an SRE from one facility to a similar facility.
- Using APICS vendor guarantees of removal efficiency.

9.5 Restrictions on Use of Test Data

The measurement of an SRE or an APICS RE may be limited by the detection limits of the measurement technique. If the emission of a pollutant is undetectable, then the calculation of SRE or APICS RE should be based on the lower limit of detectability. An SRE or APICS RE of 100 percent is not acceptable.

Further, mass balance data of facility inputs, emissions, and products/residues may not be used to support a partitioning factor, given the inherent uncertainties of such procedures. Partitioning factors other than the default values may be supported based on engineering judgement, considering, for example, process chemistry. Emissions test data may be used to support an engineering judgement-based SRE, which includes both partitioning and APICS RE.

9.5 References

1. Barton, R.G., W.D. Clark, and W.R. Seeker. (1990) "Fate of Metals in Waste Combustion Systems". Combustion Science and Technology. 74, 1-6, p. 327

SECTION 10.0 ALTERNATIVE METHODOLOGY FOR IMPLEMENTING METALS CONTROLS

10.1 Applicability

This method for controlling metals emissions applies to cement kilns and other industrial furnaces operating under interim status that recycle emission control residue back into the furnace.

10.2 Introduction

Under this method, cement kilns and other industrial furnaces that recycle emission control residue back into the furnace must comply with a kiln dust concentration limit (i.e., a collected particulate matter (PM) limit) for each metal, as well as limits on the maximum feedrates of each of the metals in: (1) pumpable hazardous waste; and (2) all hazardous waste.

The following subsections describe how this method for controlling metals emissions is to be implemented:

- Subsection 10.3 discusses the basis of the method and the assumptions upon which it is founded;
- Subsection 10.4 provides an overview of the implementation of the method;
- Subsection 10.5 is a step-by-step procedure for implementation of the method;
- Subsection 10.6 describes the compliance procedures for this method; and
- Appendix A describes the statistical calculations and tests to be used in the method.

10.3 Basis

The viability of this method depends on three fundamental assumptions:

(1) Variations in the ratio of the metal concentration in the emitted particulate to the metal concentration in the collected kiln dust (referred to as the enrichment factor or EF) for any given metal at any given facility will fall within a normal distribution that can be experimentally determined.

(2) The metal concentrations in the collected kiln dust can be accurately and representatively measured (using procedures specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846), incorporated by reference in 40 CFR 260.11).

(3) The facility will remain in compliance with the applicable particulate matter (PM) emission standard.

Given these assumptions, metal emissions can be related to the measured concentrations in the collected kiln dust by the following equation:

$$ME \left(\frac{lb \text{ Emitted Metal}}{hr} \right) =$$

$$PME \left(\frac{lb \text{ PM}}{hr} \right) DMC \left(\frac{lb \text{ Dust Metal}}{lb \text{ Dust}} \right) EF \left(\frac{lb \text{ Emitted Metal/lb PM}}{lb \text{ Dust Metal/lb Dust}} \right) \quad (1)$$

Where:

ME is the metal emitted;

PME is the particulate matter emitted;
DMC is the metal concentration in the
collected kiln dust; and

EF is the enrichment factor, which is the ratio
of the metal concentration in the emitted
particulate matter to the metal
concentration in the collected kiln dust.

This equation can be rearranged to
calculate a maximum allowable dust metal

concentration limit (DMCL) by assuming
worst-case conditions that: metal emissions
are at the Tier III (or Tier II) limit (see 40 CFR
266.106), and that particulate emissions are at
the particulate matter limit (PML):

$$DMCL \left(\frac{lb \text{ Dust Metal}}{lb \text{ Dust}} \right) = \frac{\text{Tier III Limit} \left(\frac{lb \text{ Emitted Metal}}{hr} \right)}{PML \left(\frac{lb \text{ PM}}{hr} \right) EF \left(\frac{lb \text{ Emitted Metal/lb PM}}{lb \text{ Dust Metal/lb Dust}} \right)} \quad (2)$$

The enrichment factor used in the above
equation must be determined experimentally
from a minimum of 10 tests in which metal
concentrations are measured in kiln dust and
stack samples taken simultaneously. This
approach provides a range of enrichment

factors that can be inserted into a statistical
distribution (t-distribution) to determine EF_{95%}
and EF_{99%}. EF_{95%} is the value at which there is
a 95% confidence level that the enrichment
factor is below this value at any given time.
Similarly, EF_{99%} is the value at which there is

a 99% confidence level that the enrichment
factor is below this value at any given time.
EF_{99%} is used to calculate the "violation" dust
metal concentration limit (DMCL_v):

$$DMCL_v \left(\frac{lb \text{ Dust Metal}}{lb \text{ Dust}} \right) = \frac{\text{Tier III Limit} \left(\frac{lb \text{ Emitted Metal}}{hr} \right)}{PML \left(\frac{lb \text{ PM}}{hr} \right) EF_{99\%} \left(\frac{lb \text{ Emitted Metal/lb PM}}{lb \text{ Dust Metal/lb Dust}} \right)} \quad (3)$$

If the kiln dust metal concentration is just
above this "violation" limit, and the PM
emissions are at the PM emissions limit, there
is a 5% chance that the metal emissions are
above the Tier III limit. In such a case, the
facility would be in violation of the metals
standard.

To provide a margin of safety, a second,
more conservative kiln dust metal
concentration limit is also used. This
"conservative" dust metal concentration limit

(DMCL_c) is calculated using a "safe"
enrichment factor (SEF). If EF_{99%} is greater
than two times the value of EF_{95%}, the "safe"
enrichment factor can be calculated using
Equation 4a:

$$SEF > 2 EF_{95\%} \quad (4a)$$

If EF_{99%} is not greater than two times the
value of EF_{95%}, the "safe" enrichment factor
can be calculated using Equation 4b:
SEF > EF_{99%} (4b)

In cases where the enrichment factor
cannot be determined because the kiln dust
metal concentration is nondetectable, the
"safe" enrichment factor is as follows:

$$SEF = 100 \quad (4c)$$

For all cases, the "conservative" dust metal
concentration limit is calculated using the
following equation:

$$DMCL_c \left(\frac{lb \text{ Dust Metal}}{lb \text{ Dust}} \right) = \frac{\text{Tier III Limit} \left(\frac{lb \text{ Emitted Metal}}{hr} \right)}{PML \left(\frac{lb \text{ PM}}{hr} \right) SEF \left(\frac{lb \text{ Emitted Metal/lb PM}}{lb \text{ Dust Metal/lb Dust}} \right)} \quad (5)$$

If the kiln dust metal concentration at a
facility is just above the "conservative" limit
based on that "safe" enrichment factor

provided in Equation 4a, and the PM
emissions are at the PM emissions limit, there
is a 5% chance that the metal emissions are

above one-half the Tier III limit. If the kiln
dust metal concentration at the facility is just
above the "conservative" limit based on the

"safe" enrichment factor provided in Equation 4b, and the PM emissions are at the PM emissions limit, there is a 1% chance that the metal emissions are above the Tier III limit. In either case, the facility would be unacceptably close to a violation. If this situation occurs more than 5% of the time, the facility would be required to rerun the series of 10 tests to determine the enrichment factor. To avoid this expense, the facility would be advised to reduce its metals feedrates or to take other appropriate measures to maintain its kiln dust metal concentrations in compliance with the "conservative" dust metal concentration limits.

In cases where the enrichment factor cannot be determined because the kiln dust metal concentration is nondetectable, and thus no $EF_{95\%}$ exists, the "violation" dust metal concentration limit is set at ten times the "conservative" limit:

$$DMCL_v = 10 \times DMCL_c \quad (6)$$

10.4 Overview

The flowchart for implementing the method is shown in Figure 10.4-1. The general procedure is as follows:

- Follow the certification of precompliance procedures described in subsection 10.6 (to comply with 40 CFR 266.103(b)).

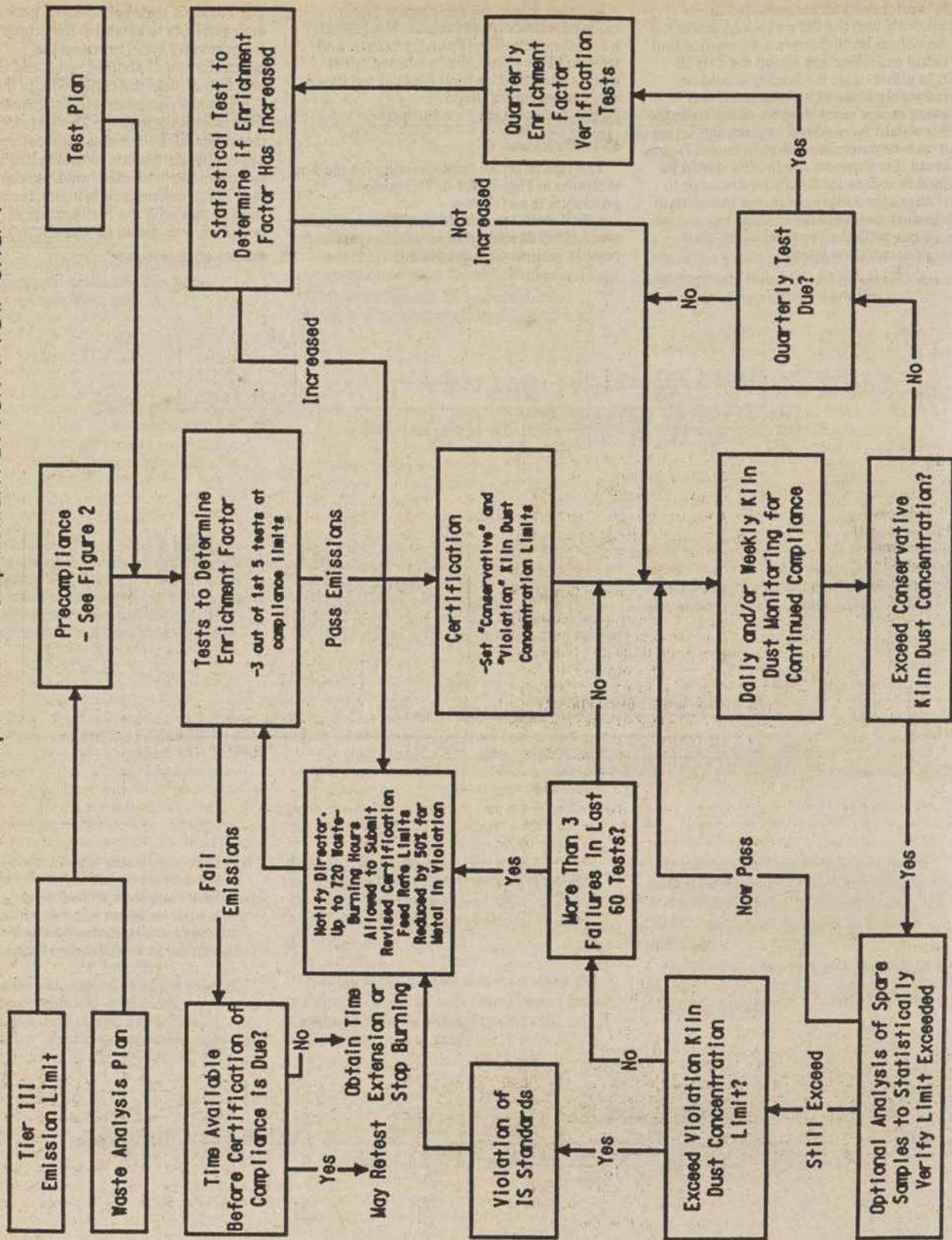
- For each metal of concern, perform a series of tests to establish the relationship (enrichment factor) between the concentration of emitted metal and the metal concentration in the collected kiln dust.

- Use the demonstrated enrichment factor, in combination with the Tier III (or Tier II) metal emission limit and the most stringent applicable particulate emission limit, to calculate the "violation" and "conservative" dust metal concentration limits. Include this information with the certification of compliance under 40 CFR 266.103(c).

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Compliance Implementation Flow Chart

Figure 10.4-1



- Perform daily and/or weekly monitoring of the cement kiln dust metal concentration to ensure (with appropriate QA/QC) that the metal concentration does not exceed either limit.

- If the cement kiln dust metal concentration exceeds the "conservative" limit more than 5% of the time (i.e., more than three failures in last 60 tests), the series of tests to determine the enrichment factor must be repeated.
- If the cement kiln dust metal concentration exceeds the "violation" limit, a violation has occurred.

- Perform quarterly tests to verify that the enrichment factor has not increased significantly. If the enrichment factor has increased, the series of tests to determine the enrichment factor must be repeated.

10.5 Implementation Procedures

A step-by-step description for implementing the method is provided below:

(1) Prepare initial limits and test plans.

- Determine the Tier III metal emission limit. The Tier II metal emission limit may also be used (see 40 CFR 266.106).

- Determine the applicable PM emission standard. This standard is the most stringent particulate emission standard that applies to the facility. A facility may elect to restrict itself to an even more stringent self-imposed PM emission standard, particularly if the facility finds that it is easier to control particulate emissions than to reduce the kiln dust concentration of a certain metal (i.e., lead).

- Determine which metals need to be monitored (i.e., all hazardous metals for which Tier III emission limits are lower than PM emission limits—assuming PM is pure metal).

- Follow the compliance procedures described in Subsection 10.6.

- Follow the guidelines described in SW-846 for preparing test plans and waste analysis plans for the following tests:

- Compliance tests to determine limits on metal feedrates in pumpable hazardous wastes and in all hazardous wastes (as well as to determine other compliance parameters);

- Initial tests to determine enrichment factors;

- Quarterly tests to verify enrichment factors;

- Analysis of hazardous waste feedstreams; and

- Daily and/or weekly monitoring of kiln dust for continuing compliance.

(2) Conduct tests to determine the enrichment factor.

- These tests must be conducted within a 14-day period. No more than two tests may be conducted in any single day. If the tests are not completed within a 14-day period, they must be repeated.

- Simultaneous stack samples and kiln dust samples must be taken.

- Stack sampling must be conducted with the multiple metals train according to procedures provided in section 10.3 of this Methods Manual.

- Kiln dust sampling must be conducted as follows:

- Follow the sampling and analytical procedures described in SW-846 and the waste analysis plan as they pertain to the condition and accessibility of the dust.

- Samples should be representative of the last ESP or Fabric Filter in the APCS series.

- The feedrates of hazardous metals in all pumpable hazardous waste streams and in all hazardous waste streams must be monitored during these tests. It is recommended (but not required) that the feedrates of hazardous metals in all feedstreams also be monitored.

- At least ten single (noncomposited) runs are required during the tests.

- The facility must follow a normal schedule of kiln dust recharging for all of the tests.

- Three of the first five tests must be compliance tests in conformance with 40 CFR 266.103(c); i.e., they must be used to determine maximum allowable feedrates of metals in pumpable hazardous wastes, and in all hazardous wastes, as well as to determine other compliance limits (see 40 CFR 266.103(c)(1)).

- The remainder of the tests need not be conducted under full compliance test conditions; however, the facility must operate at its compliance test production rate, and it must burn hazardous waste during these tests such that the feedrate of each metal for pumpable and total hazardous wastes is at least 25% of the feedrate during compliance testing. If these criteria, and those discussed below, are not met for any parameter during a test, then either the test is not valid for determining enrichment factors under this method, or the compliance limits for that parameter must be established based on these test conditions rather than on the compliance test conditions.

- Verify that compliance emission limits are not exceeded.

- Metal emissions must not exceed Tier III (or Tier II) limits.

- PM emissions must not exceed the most stringent of applicable PM standards (or an optional self-imposed particulate standard).

- The facility must generate normal, marketable product using normal raw materials and fuels under normal operating conditions (for parameters other than those specified under this method) when these tests are conducted.

- Chromium must be treated as a special case:

- The enrichment factor for total chromium is calculated in the same way as the enrichment factor for other metals (i.e., the enrichment factor is the ratio of the concentration of total chromium in the emitted particulate matter to the concentration of total chromium in the collected kiln dust).

- The enrichment factor for hexavalent chromium (if measured) is defined as the ratio of the concentration of hexavalent chromium in the emitted particulate matter to the concentration of total chromium in the collected kiln dust.

(3) Use the enrichment factors measured in Step 2 to determine EF_{95%}, EF_{99%}, and SEF.

- Calculate EF_{95%} and EF_{99%} according to the t-distribution as described in Appendix A

- Calculate SEF by

- Equation 4a if EF_{95%} is determinable and if EF_{95%} is greater than two times EF_{99%},

- Equation 4b if EF_{95%} is determinable and if EF_{95%} is not greater than two times EF_{99%},

- Equation 4c if EF_{95%} is not determinable.

The facility may choose to set an even more conservative SEF to give itself a larger margin of safety between the point where corrective action is necessary and the point where a violation occurs.

(4) Prepare certification of compliance.

- Calculate the "conservative" dust metal concentration limit (DMCL_c) using Equation 5.

- Chromium is treated as a special case. The "conservative" kiln dust chromium concentration limit is set for total chromium, not for hexavalent chromium. The limit for total chromium must be calculated using the Tier III (or Tier II) metal limit for hexavalent chromium.

- If the stack samples described in Step 2 were analyzed for hexavalent chromium, the SEF based on the hexavalent chromium enrichment factors (as defined in Step 2) must be used in this calculation.

- If the stack samples were not analyzed for hexavalent chromium, then the SEF based on the total chromium enrichment factor must be used in this calculation.

- Calculate the "violation" dust metal concentration limit (DMCL_v) using Equation 3 if EF_{95%} is determinable, or using Equation 6 if EF_{95%} is not determinable.

- Chromium is treated as a special case. The "violation" kiln dust chromium concentration limit is set for total chromium, not for hexavalent chromium. The limit for total chromium must be calculated using the Tier III (or Tier II) metal limit for hexavalent chromium.

- If the stack samples taken in Step 2 were analyzed for hexavalent chromium, the EF_{95%} based on the hexavalent chromium enrichment factor (as defined in Step 2) should be used in this calculation.

- If the stack samples were not analyzed for hexavalent chromium, the EF_{95%} based on the total chromium enrichment factor must be used in this calculation.

- Submit certification of compliance.
- Steps 2-4 must be repeated for recertification, which is required once every 3 years (see § 266.103(d)).

(5) Monitor metal concentrations in kiln dust for continuing compliance, and maintain compliance with all compliance limits for the duration of interim status.

- Metals to be monitored during compliance testing are classified as either "critical" or "noncritical" metals.

- All metals must initially be classified as "critical" metals and be monitored on a daily basis.

- A "critical" metal may be reclassified as a "noncritical" metal if its concentration in the kiln dust remains below 10% of its "conservative" kiln dust metal concentration limit for 30 consecutive daily samples. "Noncritical" metals must be monitored on a weekly basis.

- A "noncritical" metal must be reclassified as a "critical" metal if its concentration in the kiln dust is above 10% of its

"conservative" kiln dust metal concentration limit for any single daily or weekly sample.

- Noncompliance with the sampling and analysis schedule prescribed by this method is a violation of the metals controls under § 266.103.

- Follow the sampling, compositing, and analytical procedures described in this method and in SW-846 as they pertain to the condition and accessibility of the kiln dust.

- Follow the same procedures and sample at the same locations as were used for kiln dust samples collected to determine the enrichment factors (as discussed in Step 2).

- Samples must be collected at least once every 8 hours, and a daily composite must be prepared according to SW-846 procedures.

- At least one composite sample is required. This sample is referred to as the "required" sample.

- For QA/QC purposes, a facility may elect to collect two or more additional samples. These samples are referred to as the "spare" samples. These additional samples must be collected over the same time period and according to the same procedures as those used for the "required" sample.

- Samples for "critical" metals must be daily composites.

- Samples for "noncritical" metals must be weekly composites. These samples can be composites of the original 8-hour samples, or they can be composites of daily composite samples.

- Analyze the "required" sample to determine the concentration of each metal.

- This analysis must be completed within 48 hours of the close of the sampling period. Failure to meet this schedule is a violation of the metals standards of § 266.103.

- If the "conservative" kiln dust metal concentration limit is exceeded for any metal, refer to Step 8.

- If the "conservative" kiln dust metal concentration limit is not exceeded, continue with the daily or weekly monitoring (Step 5) for the duration of interim status.

- Conduct quarterly enrichment factor verification tests, as described in Step 6.

- (6) Conduct quarterly enrichment factor verification tests.

- After certification of compliance with the metals standards, a facility must conduct quarterly enrichment factor verification tests every three months for the duration of interim status. The first quarterly test must be completed within three months of certification (or recertification). Each subsequent quarterly test must be completed within three months of the preceding quarterly test. Failure to meet this schedule is a violation.

- Simultaneous stack samples and kiln dust samples must be collected.

- Follow the same procedures and sample at the same locations as were used for kiln dust samples and stack samples collected to determine the enrichment factors (as discussed in Step 2).

- At least three single (noncomposited) runs are required. These tests need not be conducted under the operating conditions of the initial compliance test; however, the

facility must operate under the following conditions:

- It must operate at compliance test production rate.
- It must burn hazardous waste during the test, and for the 2-day period immediately preceding the test, such that the feedrate of each metal for pumpable and total hazardous wastes consist of at least 25% of the operating limits established during the compliance test.
- It must remain in compliance with all compliance parameters (see § 266.103(c)(1)).
- It must follow a normal schedule of kiln dust recharging.
- It must generate normal marketable product from normal raw materials during the tests.

(7) Conduct a statistical test to determine if the enrichment factors measured in the quarterly verification tests have increased significantly from the enrichment factors determined in the tests conducted in Step 2. The enrichment factors have increased significantly if all three of the following criteria are met:

- By applying the t-test described in appendix A, it is determined that the enrichment factors measured in the quarterly tests are not taken from the same population as the enrichment factors measured in the Step 2 tests;

- The EF_{95%} calculated for the combined data sets (i.e., the quarterly test data and the original Step 2 test data) according to the t-distribution (described in appendix A) is more than 10% higher than the EF_{95%} based on the enrichment factors previously measured in Step 2; and

- The highest measured kiln dust metal concentration recorded in the previous quarter is more than 10% of the "violation" kiln dust concentration limit that would be calculated from the combined EF_{95%}.

If the enrichment factors have increased significantly, the tests to determine the enrichment factors must be repeated (refer to Step 11). If the enrichment factors have not increased significantly, continue to use the kiln dust metal concentration limits based on the enrichment factors previously measured in Step 2, and continue with the daily and/or weekly monitoring described in Step 5.

(8) If the "conservative" kiln dust metal concentration limit was exceeded for any metal in any single analysis of the "required" kiln dust sample, the "spare" samples corresponding to the same period may be analyzed to determine if the exceedance was due to a sampling or analysis error.

- If no "spare" samples were taken, refer to Step 9.

- If the average of all the samples for a given day (or week, as applicable) (including the "required" sample and the "spare" samples) does not exceed the "conservative" kiln dust metal concentration limit, no corrective measures are necessary; continue with the daily and/or weekly monitoring as described in Step 5.

- If the average of all the samples for a given day (or week, as applicable) exceeds the "conservative" kiln dust metal concentration limit, but the average of the

"spare" samples is below the "conservative" kiln dust metal concentration limit, apply the Q-test, described in appendix A, to determine whether the "required" sample concentration can be judged as an outlier.

- If the "required" sample concentration is judged an outlier, no corrective measures are necessary; continue with the daily and/or weekly monitoring described in Step 5.
- If the "required" sample concentration is not judged an outlier, refer to Step 9.

(9) Determine if the "violation" kiln dust metal concentration has been exceeded based on either the average of all the samples collected during the 24-hour period in question, or if discarding an outlier can be statistically justified by the Q-test described in appendix A, on the average of the remaining samples.

- If the "violation" kiln dust metal concentration limit has been exceeded, a violation of the metals controls under § 266.103(c) has occurred. Notify the Director that a violation has occurred. Hazardous waste may be burned for testing purposes for up to 720 operating hours to support a revised certification of compliance. Note that the Director may grant an extension of the hours of hazardous waste burning under § 266.103(c)(7) if additional burning time is needed to support a revised certification for reasons beyond the control of the owner or operator. Until a revised certification of compliance is submitted to the Director, the feedrate of the metals in violation in total and pumpable hazardous waste feeds is limited to 50% of the previous compliance test limits.

- If the "violation" kiln dust metal concentration has not been exceeded:

- If the exceedance occurred in a daily composite sample, refer to Step 10.
- If the exceedance occurred in a weekly composite sample, refer to Step 11.

(10) Determine if the "conservative" kiln dust metal concentration limit has been exceeded more than three times in the last 60 days.

- If not, log this exceedance and continue with the daily and/or weekly monitoring (Step 5).

- If so, the tests to determine the enrichment factors must be repeated (refer to Step 11).

- This determination is made separately for each metal; For example,

- Three exceedances for each of the ten hazardous metals are allowed within any 60-day period.

- Four exceedances of any single metal in any 60-day period is not allowed.

- This determination should be made daily, beginning on the first day of daily monitoring. For example, if four exceedances of any single metal occur in the first four days of daily monitoring, do not wait until the end of the 60-day period; refer immediately to Step 11.

(11) The tests to determine the enrichment factor must be repeated if: (1) More than three exceedances of the "conservative" kiln dust metal concentration limit occur within any 60 consecutive daily samples; (2) an excursion of the "conservative" kiln dust metal concentration limit occurs in any

weekly sample; or (3) a quarterly test indicates that the enrichment factors have increased significantly.

- The facility must notify the Director if these tests must be repeated.
- The facility has up to 720 hazardous-waste-burning hours to redetermine the enrichment factors for the metal or metals in question and to recertify (beginning with a return to Step 2). During this period, the facility must reduce the feed rate of the metal in violation by 50%. If the facility has not completed the recertification process within this period, it must stop burning or obtain an extension. Hazardous waste burning may resume only when the recertification process (ending with Step 4) has been completed.

- Meanwhile, the facility must continue with daily kiln dust metals monitoring (Step 5) and must remain in compliance with the "violation" kiln dust metal concentration limits (Step 9).

10.8 Precompliance Procedures

Cement kilns and other industrial furnaces that recycle emission control residue back into the furnace must comply with the same certification schedules and procedures (with the few exceptions described below) that apply to other boilers and industrial furnaces. These schedules and procedures, as set forth

in § 266.103, require no later than the effective date of the rule, each facility submit a certification which establishes precompliance limits for a number of compliance parameters (see § 266.103(b)(3)), and that each facility immediately begin to operate under these limits.

These precompliance limits must ensure that interim status emissions limits for hazardous metals, particulate matter, HCl, and Cl₂ are not likely to be exceeded. Determination of the values of the precompliance limits must be made based on either (1) conservative default assumptions provided in this Methods Manual, or (2) engineering judgement.

The flowchart for implementing the precompliance procedures is shown in Figure 10.8-1. The step-by-step precompliance implementation procedure is described below. The precompliance implementation procedures and numbering scheme are similar to those used for the compliance procedures described in Subsection 10.5.

- (1) Prepare initial limits and test plans.
 - Determine the Tier III metal emission limit. The Tier II metal emission limit may also be used (see 40 CFR 266.106).
 - Determine the applicable PM emission standard. This standard is the most stringent particulate emission standard that applies to

the facility. A facility may elect to restrict itself to an even more stringent self-imposed PM emission standard, particularly if the facility finds that it is easier to control particulate emissions than to reduce the kiln dust concentration of a certain metal (i.e., lead).

- Determine which metals need to be monitored (i.e., all hazardous metals for which Tier III emission limits are lower than PM emission limits, assuming PM is pure metal).

- Follow the procedures described in SW-846 for preparing waste analysis plans for the following tasks:

—Analysis of hazardous waste feedstreams.

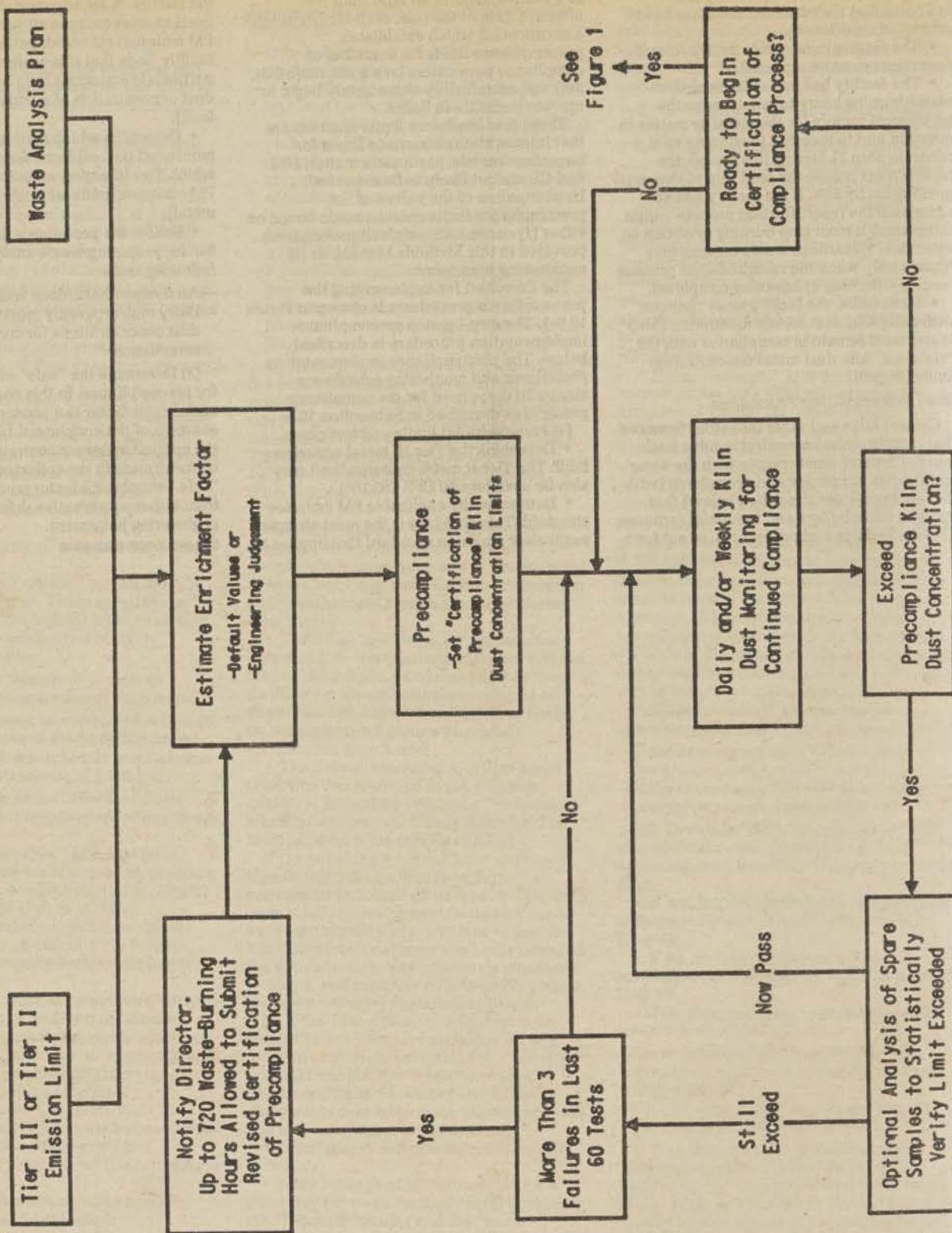
—Daily and/or weekly monitoring of kiln dust concentrations for continuing compliance.

- (2) Determine the "safe" enrichment factor for precompliance. In this context, the "safe" enrichment factor is a conservatively high estimate of the enrichment factor (the ratio of the emitted metal concentration to the metal concentration in the collected kiln dust). The "safe" enrichment factor must be calculated from either conservative default values, or engineering judgement.

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Figure 10.6-1

Precompliance Implementation Flow Chart



- Conservative default values for the "safe" enrichment factor are as follows:
 - SEF = 10 for all hazardous metals except mercury. SEF = 10 for antimony, arsenic, barium, beryllium, cadmium, chromium, lead, silver, and thallium.
 - SEF = 100 for mercury.

Engineering judgement may be used in place of conservative default assumptions provided that the engineering judgement is defensible and properly documented. The facility must keep a written record of all assumptions and calculations necessary to justify the SEF. The facility must provide this record to EPA upon request and must be prepared to defend these assumptions and calculations.

Examples of situations where the use of engineering judgement is appropriate include:

- Use of data from precompliance tests;
- Use of data from previous compliance tests; and

—Use of data from similar facilities.

(3) This step does not apply to precompliance procedures.

(4) Prepare certification of precompliance.

- Calculate the "conservative" dust metal concentration limit (DMCL_c) using Equation 5.

Submit certification of precompliance. This certification must include precompliance limits for all compliance parameters that apply to other boilers and industrial furnaces (i.e., those that do not recycle emission control residue back into the furnace) as listed in § 266.103(b)(3), except that it is not necessary to set precompliance limits on maximum feedrate of each hazardous metal in all combined feedstreams.

Furnaces that recycle collected PM back into the furnace (and that elect to comply with this method [see § 266.103(c)(3)(ii)]) are subject to a special precompliance parameter, however. They must establish precompliance limits on the maximum concentration of each hazardous metal in collected kiln dust. (which must be set according to the procedures described above).

(5) Monitor metal concentration in kiln dust for continuing compliance, and maintain compliance with all precompliance limits until certification of compliance has been submitted.

Metals to be monitored during precompliance testing are classified as either "critical" or "noncritical" metals.

All metals must initially be classified as "critical" metals and be monitored on a daily basis.

A "critical" metal may be reclassified as a "noncritical" metal if its concentration in the kiln dust remains below 10% of its "conservative" kiln dust metal concentration limit for 30 consecutive daily samples. "Noncritical" metals must be monitored on a weekly basis, at a minimum.

A "noncritical" metal must be reclassified as a "critical" metal if its concentration in the kiln dust is above 10% of its "conservative" kiln dust metal concentration limit for any single daily or weekly sample.

It is a violation if the facility fails to analyze the kiln dust for any "critical" metal on any single day or for any "noncritical"

metal during any single week, when hazardous waste is burned.

Follow the sampling, compositing, and analytical procedures described in this method and in SW-846 as they pertain to the condition and accessibility of the kiln dust.

Samples must be collected at least once every 8 hours, and a daily composite prepared according to SW-846 procedures.

At least one composite sample is required.

This sample is referred to as the "required" sample.

For QA/QC purposes, a facility may elect to collect two or more additional samples. These samples are referred to as the "spare" samples. These additional samples must be collected over the same time period and according to the same procedures as those used for the "required" sample.

Samples for "critical" metals must be daily composites.

Samples for "noncritical" metals must be weekly composites, at a minimum. These samples can be composites of the original 8-hour samples, or they can be composites of daily composite samples.

Analyze the "required" sample to determine the concentration of each metal.

This analysis must be completed within 48 hours of the close of the sampling period. Failure to meet this schedule is a violation.

If the "conservative" kiln dust metal concentration limit is exceeded for any metal, refer to Step 8.

If the "conservative" kiln dust metal concentration limit is not exceeded, continue with the daily and/or weekly monitoring (Step 5) for the duration of interim status.

(6) This step does not apply to precompliance procedures.

(7) This step does not apply to precompliance procedures.

If the "conservative" kiln dust metal concentration limit was exceeded for any metal in any single analysis of the "required" kiln dust sample, the "spare" samples corresponding to the same period may be analyzed to determine if the exceedance is due to a sampling or analysis error.

If no "spare" samples were taken, refer to Step 9.

If the average of all the samples for a given day (or week, as applicable) [including the "required" sample and the "spare" samples] does not exceed the "conservative" kiln dust metal concentration limit, no corrective measures are necessary; continue with the daily and/or weekly monitoring as described in Step 5.

If the average of all the samples for a given day (or week, as applicable) exceeds the "conservative" kiln dust metal concentration limit, but the average of the "spare" samples is below the "conservative" kiln dust metal concentration limit, apply the Q-test, described in appendix A, to determine whether the "required" sample concentration can be judged as an outlier.

If the "required" sample concentration is judged an outlier, no corrective measures are necessary; continue with the daily and/or weekly monitoring described in Step 5.

If the "required" sample concentration is not judged an outlier, refer to Step 10.

(9) This step does not apply to precompliance procedures.

(10) Determine if the "conservative" kiln dust metal concentration limit has been exceeded more than three times in the last 60 days.

If not, log this exceedance and continue with the daily and/or weekly monitoring (Step 5).

If so, the tests to determine the enrichment factors must be repeated [refer to Step 11].

This determination is made separately for each metal; for example

Three exceedances for each of the ten hazardous metals are allowed within any 60-day period.

Four exceedances of any single metal in any 60-day period is not allowed.

This determination should be made daily, beginning on the first day of daily monitoring. For example, if four exceedances of any single metal occur in the first four days of daily monitoring, do not wait until the end of the 60-day period; refer immediately to Step 11.

(11) A revised certification of precompliance must be submitted to the Director [or certification of compliance must be submitted] if: (1) More than three exceedances of the "conservative" kiln dust metal concentration limit occur within any 60 consecutive daily samples; or (2) an exceedance of the "conservative" kiln dust metal concentration limit occurs in any weekly sample.

The facility must notify the Director if a revised certification of precompliance must be submitted.

The facility has up to 720 waste-burning hours to submit a certification of compliance or a revised certification of precompliance. During this period, the feed rate of the metal in violation must be reduced by 50%. In the case of a revised certification of precompliance, engineering judgement must be used to ensure that the "conservative" kiln dust metal concentration will not be exceeded. Examples of how this goal might be accomplished include:

—Changing equipment or operating procedures to reduce the kiln dust metal concentration;

—Changing equipment or operating procedures, or using more detailed engineering judgement, to decrease the estimated SEF and thus increase the "conservative" kiln dust metal concentration limit;

—Increasing the "conservative" kiln dust metal concentration limit by imposing a stricter PM emissions standard; or

—Increasing the "conservative" kiln dust metal concentration limit by performing a more detailed risk assessment to increase the metal emission limits.

Meanwhile, the facility must continue with daily kiln dust metals monitoring (Step 5).

**Appendix A to Appendix IX to Part 266—
Statistics**

A.1 Determination of Enrichment Factor

After at least 10 initial emissions tests are performed, an enrichment factor for each metal must be determined. At the 95% confidence level, the enrichment factor, $EF_{95\%}$, is based on the test results and is statistically determined so there is only a 5% chance that the enrichment factor at any given time will be larger than $EF_{95\%}$. Similarly, at the 99% confidence level, the enrichment factor, $EF_{99\%}$, is statistically determined so there is only a 1% chance that the enrichment factor at any given time will be larger than $EF_{99\%}$.

For a large number of samples ($n > 30$), $EF_{95\%}$ is based on a normal distribution, and is equal to:

$$EF_{95\%} = EF + z_c \sigma \quad (1)$$

where:

$$EF = \frac{\sum_{i=1}^n EF_i}{n} \quad (2)$$

$$\sigma = \left[\frac{\sum_{i=1}^n (EF_i - EF)^2}{n} \right]^{\frac{1}{2}} \quad (3)$$

For a 95% confidence level, z_c is equal to 1.645.

For a small number of samples ($n < 30$), $EF_{95\%}$ is based on the t-distribution and is equal to:

$$EF_{95\%} = EF + t_c S \quad (4)$$

where the standard deviation, S , is defined as:

$$S = \left[\frac{\sum_{i=1}^n (EF_i - EF)^2}{n-1} \right]^{\frac{1}{2}} \quad (5)$$

t_c is a function of the number of samples and the confidence level that is desired. It increases in value as the sample size decreases and the confidence level increases. The 95% confidence level is used in this method to calculate the "violation" kiln dust metal concentration limit; and the 99% confidence level is sometimes used to calculate the "conservative" kiln dust metal concentration limit. Values of t_c are shown in table A-1 for various degrees of freedom (degrees of freedom $n_1 + n_2 - 2$) at the 95% and 99% confidence levels. As the sample size approaches infinity, the normal distribution is approached.

A.2 Comparison of Enrichment Factor Groups

To determine if the enrichment factors measured in the quarterly tests are significantly different from the enrichment factors determined in the initial Step 2 tests, the t-test is used. In this test, the value t_{meas} :

$$t_{meas} = \frac{EF_1 - EF_2}{\sigma_t \left(\frac{1}{n_1} + \frac{1}{n_2} \right)^{\frac{1}{2}}} \quad (6)$$

$$\sigma^{meas} = \frac{DMC_{highest} - DMC_{next}}{DMC_{highest} - DMC_{lowest}} \quad (8)$$

The 90% confidence level for data rejection is used in this method. Table A-2 provides the values of Q_{crit} at the 90% confidence level. If Q_{meas} is larger than Q_{crit} , the data point can be discarded. Only one data point from a sample group can be rejected using this method.

TABLE A-1.—T-DISTRIBUTION

$n-1$ or n_1+n_2-2	t_{95}	t_{99}
1	6.31	31.82
2	2.92	6.96
3	2.35	4.54
4	2.13	3.75
5	2.02	3.36
6	1.94	3.14
7	1.90	3.00
8	1.86	2.90
9	1.83	2.82
10	1.81	2.76
11	1.80	2.72
12	1.78	2.68
13	1.77	2.65
14	1.76	2.62
15	1.75	2.60
16	1.75	2.58
17	1.74	2.57
18	1.73	2.55
19	1.73	2.54
20	1.72	2.53
25	1.71	2.48
30	1.70	2.46
40	1.68	2.42
60	1.67	2.39
120	1.66	2.36
∞	1.645	2.33

$$\sigma_t = \left(\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1 + n_2 - 2} \right)^{\frac{1}{2}} \quad (7)$$

is compared to t_{crit} at the desired confidence level. The 95% confidence level is used in this method. Values of t_{crit} are shown in table A-1 for various degrees of freedom (degrees of freedom $n_1 + n_2 - 2$) at the 95% and 99% confidence levels. If t_{meas} is greater than t_{crit} , it can be concluded with 95% confidence that the two groups are not from the same population.

A.3 Rejection of Data

If the concentration of any hazardous metal in the "required" kiln dust sample exceeds the kiln dust metal concentration limit, the "spare" samples are analyzed. If the average of the combined "required" and "spare" values is still above the limit, a statistical test is used to decide if the upper value can be rejected.

The "Q-test" is used to determine if a data point can be rejected. The difference between the questionable result and its neighbor is divided by the spread of the entire data set. The resulting ratio, Q_{meas} , is then compared with rejection values that are critical for a particular degree of confidence, where Q_{crit} is:

TABLE A-2.—CRITICAL VALUES FOR USE IN THE Q-TEST

n	Q_{crit}
3	0.94
4	0.76
5	0.64
6	0.56
7	0.51
8	0.47
9	0.44
10	0.41

Appendix X to Part 266—Guideline On Air Quality Models (Revised)

[EPA DOCUMENT NUMBER EPA-450/2-78-027R]

Preface

Industry and control agencies have long expressed a need for consistency in the application of air quality models for regulatory purposes. In the 1977 Clean Air Act, Congress mandated such consistency and encouraged the standardization of model applications. The Guideline on Air Quality Models was first published in April 1978 to satisfy these requirements by specifying models and providing guidance for their use. This guideline provides a common basis for estimating the air quality concentrations used in assessing control strategies and developing emission limits.

The continuing development of new air quality models in response to regulatory requirements and the expanded requirements for models to cover even more complex problems have emphasized the need for periodic review and update of guidance on these techniques. Four primary on-going activities provide direct input to revisions of this modeling guideline. The first is a series of annual EPA workshops conducted for the purpose of ensuring consistency and providing clarification in the application of models. The second activity, directed toward the improvement of modeling procedures, is the cooperative agreement that EPA has with the scientific community represented by the American Meteorological Society. This agreement provides scientific assessment of procedures and proposed techniques and sponsors workshops on key technical issues. The third activity is the solicitation and review of new models from the technical and user community. In the March 27, 1980 *Federal Register*, a procedure was outlined for the submittal to EPA of privately developed models. After extensive evaluation

and scientific review, these models, as well as those made available by EPA, are considered for recognition in this guideline. The fourth activity is the extensive on-going research efforts by EPA and others in air quality and meteorological modeling.

Based primarily on these four activities, this document embodies revisions to the "Guideline on Air Quality Models." Although the text has been revised from the 1978 guide, the present content and topics are similar. As necessary, new sections and topics are included. A new format has also been adopted in an attempt to lessen the time required to incorporate changes. The looseleaf notebook format allows future changes to be made on a page-by-page basis. Changes will not be scheduled, but announcements of proposed changes will be made in the *Federal Register* as needed. EPA believes that revisions to this guideline should be timely and responsive to user needs and should involve public participation to the greatest possible extent. Information on the current status of modeling guidance can always be obtained from EPA's Regional Offices.

This revised guideline was promulgated in September 1986 (51 FR 32176-32179) and, with further revisions known as supplement A, in January 1988 (53 FR 392-396).

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1.0 Introduction

This guideline recommends air quality modeling techniques that should be applied to State Implementation Plan (SIP) (1) revisions for existing sources and to new source reviews, (2) including prevention of significant deterioration (PSD). (3) It is intended for use by EPA Regional Offices in judging the adequacy of modeling analyses performed by EPA, State and local agencies and by industry. The guidance is appropriate for use by other Federal agencies and by State agencies with air quality and land management responsibilities. It serves to identify, for all interested parties, those techniques and data bases EPA considers acceptable. The guide is not intended to be a compendium of modeling techniques. Rather, it should serve as a basis by which air quality managers, supported by sound scientific judgment, have a common measure of acceptable technical analysis.

Due to limitations in the spatial and temporal coverage of air quality measurements, monitoring data normally are not sufficient as the sole basis for demonstrating the adequacy of emission limits for existing sources. Also, the impacts of new sources that do not yet exist can only be determined through modeling. Thus, models, while uniquely filling one program need, have become a primary analytical tool in most air quality assessments. Air quality measurements though can be used in a complementary manner to dispersion models, with due regard for the strengths and weaknesses of both analysis techniques. Measurements are particularly useful in assessing the accuracy of model estimates. The use of air quality measurements alone however could be preferable, as detailed in a later section of this document, when models are found to be unacceptable and monitoring data with sufficient spatial and temporal coverage are available.

It would be advantageous to categorize the various regulatory programs and to apply a designated model to each proposed source needing analysis under a given program. However, the diversity of the nation's topography and climate, and variations in source configurations and operating characteristics dictate against a strict modeling "cookbook." There is no one model capable of properly addressing all conceivable situations even within a broad category such as point sources. Meteorological phenomena associated with threats to air quality standards are rarely amenable to a single mathematical treatment; thus, case-by-case analysis and judgment are frequently required. As modeling efforts become more complex, it is increasingly important that they be directed by highly competent individuals with a broad range of experience and knowledge in air quality

meteorology. Further, they should be coordinated closely with specialists in emissions characteristics, air monitoring and data processing. The judgment of experienced meteorologists and analysts is essential.

The model that most accurately estimates concentrations in the area of interest is always sought. However, it is clear from the needs expressed by the States and EPA Regional Offices, by many industries and trade associations, and also by the deliberations of Congress, that consistency in the selection and application of models and data bases should also be sought, even in case-by-case analyses. Consistency ensures that air quality control agencies and the general public have a common basis for estimating pollutant concentrations, assessing control strategies and specifying emission limits. Such consistency is not, however, promoted at the expense of model and data base accuracy. This guide provides a consistent basis for selection of the most accurate models and data bases for use in air quality assessments.

Recommendations are made in this guide concerning air quality models, data bases, requirements for concentration estimates, the use of measured data in lieu of model estimates, and model evaluation procedures. Models are identified for some specific applications. The guidance provided here should be followed in all air quality analyses relative to State Implementation Plans and in analyses required by EPA, State and local agency air programs. The EPA may approve the use of another technique that can be demonstrated to be more appropriate than those recommended in this guide. This is discussed at greater length in section 3.0. In all cases, the model applied to a given situation should be the one that provides the most accurate representation of atmospheric transport, dispersion, and chemical transformations in the area of interest. However, to ensure consistency, deviations from this guide should be carefully documented and fully supported.

From time to time situations arise requiring clarification of the intent of the guidance on a specific topic. Periodic workshops are held with the EPA Regional Meteorologists to ensure consistency in modeling guidance and to promote the use of more accurate air quality models and data bases. The workshops serve to provide further explanations of guideline requirements to the Regional Offices and workshop reports are issued with this clarifying information. In addition, findings from on-going research programs, new model submittals, or results from model evaluations and applications are continuously evaluated. Based on this information changes in the guidance may be indicated.

All changes to this guideline must follow rulemaking requirements since the guideline has been incorporated by reference in the PSD regulations. Changes will be proposed and noticed in the *Federal Register*. Ample opportunity for public comment will be provided for each proposed change and public hearings scheduled if requested. Published, final changes will be made available through the National Technical Information Service (NTIS).

A wide range of topics on modeling and data bases are discussed in the remainder of this guideline. Where specific recommendations are made, the recommendations are typed in a single-spaced format. Chapter 2 gives an overview of models and their appropriate use. Chapter 3 provides specific guidance on the use of "preferred" air quality models and on the selection of alternative techniques. Chapters 4 through 7 provide recommendations on modeling techniques for application to simple-terrain stationary source problems, complex terrain problems, and mobile source problems. Specific modeling requirements for selected regulatory issues are also addressed. Chapter 8 discusses issues common to many modeling analyses, including acceptable model components. Chapter 9 makes recommendations for data inputs to models including source, meteorological and background air quality data. Chapter 10 covers the uncertainty in model estimates and how that information can be useful to the regulatory decision-maker. The last chapter summarizes how estimates and measurements of air quality are used in assessing source impact and in evaluating control strategies.

Appendix A contains summaries of refined air quality models that are "preferred" for specific applications; both EPA models and models developed by others are included. Appendix B contains summaries of other refined models that may be considered with a case-specific justification. Appendix C contains a checklist of requirements for an air quality analysis.

2.0 Overview of Model Use

Before attempting to implement the guidance contained in this document, the reader should be aware of certain general information concerning air quality models and their use. Such information is provided in this section.

2.1 Suitability of Models

The extent to which a specific air quality model is suitable for the evaluation of source impact depends upon several factors. These include: (1) The meteorological and topographic complexities of the area; (2) the level of detail and accuracy needed for the analysis; (3) the technical competence of those undertaking such simulation modeling; (4) the resources available; and (5) the detail and accuracy of the data base, i.e., emissions inventory, meteorological data, and air quality data. Appropriate data should be available before any attempt is made to apply a model. A model that requires detailed, precise, input data should not be used when such data are unavailable. However, assuming the data are adequate, the greater the detail with which a model considers the spatial and temporal variations in emissions and meteorological conditions, the greater the ability to evaluate the source impact and to distinguish the effects of various control strategies.

Air quality models have been applied with the most accuracy or the least degree of uncertainty to simulations of long term averages in areas with relatively simple topography. Areas subject to major topographic influences experience

meteorological complexities that are extremely difficult to simulate. Although models are available for such circumstances, they are frequently site specific and resource intensive. In the absence of a model capable of simulating such complexities, only a preliminary approximation may be feasible until such time as better models and data bases become available.

Models are highly specialized tools. Competent and experienced personnel are an essential prerequisite to the successful application of simulation models. The need for specialists is critical when the more sophisticated models are used or the area being investigated has complicated meteorological or topographic features. A model applied improperly, or with inappropriately chosen data, can lead to serious misjudgments regarding the source impact or the effectiveness of a control strategy.

The resource demands generated by use of air quality models vary widely depending on the specific application. The resources required depend on the nature of the model and its complexity, the detail of the data base, the difficulty of the application, and the amount and level of expertise required. The costs of manpower and computational facilities may also be important factors in the selection and use of a model for a specific analysis. However, it should be recognized that under some sets of physical circumstances and accuracy requirements, no present model may be appropriate. Thus, consideration of these factors should not lead to selection of an inappropriate model.

2.2 Classes of Models

The air quality modeling procedures discussed in this guide can be categorized into four generic classes: Gaussian, numerical, statistical or empirical, and physical. Within these classes, especially Gaussian and numerical models, a large number of individual "computational algorithms" may exist, each with its own specific applications. While each of the algorithms may have the same generic basis, e.g., Gaussian, it is accepted practice to refer to them individually as models. For example, the CRSTER model and the RAM model are commonly referred to as individual models. In fact, they are both variations of a basic Gaussian model. In many cases the only real difference between models within the different classes is the degree of detail considered in the input or output data.

Gaussian models are the most widely used techniques for estimating the impact of nonreactive pollutants. Numerical models may be more appropriate than Gaussian models for area source urban applications that involve reactive pollutants, but they require much more extensive input data bases and resources and therefore are not as widely applied. Statistical or empirical techniques are frequently employed in situations where incomplete scientific understanding of the physical and chemical processes or lack of the required data bases make the use of a Gaussian or numerical model impractical. Various specific models in these three generic types are discussed in this guideline.

Physical modeling, the fourth generic type, involves the use of wind tunnel or other fluid modeling facilities. This class of modeling is a complex process requiring a high level of technical expertise, as well as access to the necessary facilities. Nevertheless, physical modeling may be useful for complex flow situations, such as building, terrain or stack downwash conditions, plume impact on elevated terrain, diffusion in an urban environment, or diffusion in complex terrain. It is particularly applicable to such situations for a source or group of sources in a geographic area limited to a few square kilometers. If physical modeling is available and its applicability demonstrated, it may be the best technique. A discussion of physical modeling is beyond the scope of this guide. The EPA publication "Guideline for Fluid Modeling of Atmospheric Diffusion," (4) provides information on fluid modeling applications and the limitations of that method.

2.3 Levels of Sophistication of Models

In addition to the various classes of models, there are two levels of sophistication. The first level consists of general, relatively simple estimation techniques that provide conservative estimates of the air quality impact of a specific source, or source category. These are screening techniques or screening models. The purpose of such techniques is to eliminate the need of further more detailed modeling for those sources that clearly will not cause or contribute to ambient concentrations in excess of either the National Ambient Air Quality Standards (NAAQS) (5) or the allowable prevention of significant deterioration (PSD) concentration increments. (3) If a screening technique indicates that the concentration contributed by the source exceeds the PSD increment or the increment remaining to just meet the NAAQS, then the second level of more sophisticated models should be applied.

The second level consists of those analytical techniques that provide more detailed treatment of physical and chemical atmospheric processes, require more detailed and precise input data, and provide more specialized concentration estimates. As a result they provide a more refined and, at least theoretically, a more accurate estimate of source impact and the effectiveness of control strategies. These are referred to as refined models.

The use of screening techniques followed by a more refined analysis is always desirable, however there are situations where the screening techniques are practically and technically the only viable option for estimating source impact. In such cases, an attempt should be made to acquire or improve the necessary data bases and to develop appropriate analytical techniques.

3.0 Recommended Air Quality Models

This section recommends refined modeling techniques that are preferred for use in regulatory air quality programs. The status of models developed by EPA, as well as those submitted to EPA for review and possible inclusion in this guidance, is discussed. The section also addresses the selection of models for individual cases and provides recommendations for situations where the

preferred models are not applicable. Two additional sources of modeling guidance, the Model Clearinghouse (6) and periodic Regional Meteorologists' workshops, are also briefly discussed here.

In all regulatory analyses, especially if other than preferred models are selected for use, early discussions among Regional Office staff, State and local control agencies, industry representatives, and where appropriate, the Federal Land Manager, are invaluable and are encouraged. Agreement on the data base to be used, modeling techniques to be applied and the overall technical approach, prior to the actual analyses, helps avoid misunderstandings concerning the final results and may reduce the later need for additional analyses. The use of an air quality checklist, such as presented in Appendix C, and the preparation of a written protocol help to keep misunderstandings at a minimum.

It should not be construed that the preferred models identified here are to be permanently used to the exclusion of all others or that they are the only models available for relating emissions to air quality. The model that most accurately estimates concentrations in the area of interest is always sought. However, designation of specific models is needed to promote consistency in model selection and application.

The 1980 solicitation of new or different models from the technical community (7) and the program whereby these models are evaluated, established a means by which new models are identified, reviewed and made available in the guideline. There is a pressing need for the development of models for a wide range of regulatory applications. Refined models that more realistically simulate the physical and chemical process in the atmosphere and that more reliably estimate pollutant concentrations are required. Thus, the solicitation of models is considered to be continuous.

3.1 Preferred Modeling Techniques

3.1.1 Discussion

EPA has developed approximately 10 models suitable for regulatory application. More than 20 additional models were submitted by private developers for possible inclusion in the guideline. These refined models have all been organized into eight categories of use: Rural, urban industrial complex, reactive pollutants, mobile sources, complex terrain, visibility, and long range transport. They are undergoing an intensive evaluation by category. The evaluation exercises (8,9,10) include statistical measures of model performance in comparison with measured air quality data as suggested by the American Meteorological Society (11) and, where possible, peer scientific reviews. (12,13,14)

When a single model is found to perform better than others in a given category, it is recommended for application in that category as a preferred model and listed in appendix A. If no one model is found to clearly perform better through the evaluation exercise, then the preferred model listed in appendix A is selected on the basis of other factors such as past use, public familiarity, cost or resource

requirements, and availability. No further evaluation of a preferred model is required if the source follows EPA recommendations specified for the model in this guideline. The models not specifically recommended for use in a particular category are summarized in appendix B. These models should be compared with measured air quality data when they are used for regulatory applications consistent with recommendations in section 3.2.

The solicitation of new refined models which are based on sounder scientific principles and which more reliably estimate pollutant concentrations is considered by EPA to be continuous. Models that are submitted in accordance with the provisions outlined in the *Federal Register* notice of March 1980 (45 FR 20157) (7) will be evaluated as submitted.

These requirements are: 1. The model must be computerized and functioning in a common Fortran language suitable for use on a variety of computer systems.

2. The model must be documented in a user's guide which identifies the mathematics of the model, data requirements and program operating characteristics at a level of detail comparable to that available for currently recommended models, e.g., the Single Source [CRSTER] Model.

3. The model must be accompanied by a complete test data set including input parameters and output results. The test data must be included in the user's guide as well as provided in computer-readable form.

4. The model must be useful to typical users, e.g., State air pollution control agencies, for specific air quality control problems. Such users should be able to operate the computer program(s) from available documentation.

5. The model documentation must include a comparison with air quality data or with other well-established analytical techniques.

6. The developer must be willing to make the model available to users at reasonable cost or make it available for public access through the National Technical Information Service; the model cannot be proprietary.

The evaluation process will include a determination of technical merit, in accordance with the above six items including the practicality of the model for use in ongoing regulatory programs. Each model will also be subjected to a performance evaluation for an appropriate data base and to a peer scientific review. Models for wide use (not just an isolated case!) found to perform better, based on an evaluation for the same data bases used to evaluate models in appendix A, will be proposed for inclusion as preferred models in future guideline revisions.

3.1.2 Recommendations

Appendix A identifies refined models that are preferred for use in regulatory applications. If a model is required for a particular application, the user should select a model from that appendix. These models may be used without a formal demonstration of applicability as long as they are used as indicated in each model summary of appendix A. Further recommendations for the application of these models to specific source

problems are found in subsequent sections of this guideline.

If changes are made to a preferred model without affecting the concentration estimates, the preferred status of the model is unchanged. Examples of modifications that do not affect concentrations are those made to enable use of a different computer or those that affect only the format or averaging time of the model results. However, when any changes are made, the Regional Administrator should require a test case example to demonstrate that the concentration estimates are not affected.

A preferred model should be operated with the options listed in appendix A as "Recommendations for Regulatory Use." If other options are exercised, the model is no longer "preferred." Any other modification to a preferred model that would result in a change in the concentration estimates likewise alters its status as a preferred model. Use of the model must then be justified on a case-by-case basis.

3.2 Use of Alternative Models

3.2.1 Discussion

Selection of the best techniques for each individual air quality analysis is always encouraged, but the selection should be done in a consistent manner. A simple listing of models in this guide cannot alone achieve that consistency nor can it necessarily provide the best model for all possible situations. An EPA document, "Interim Procedures for Evaluating Air Quality Models," (15, 16) has been prepared to assist in developing a consistent approach when justifying the use of other than the preferred modeling techniques recommended in this guide. These procedures provide a general framework for objective decision-making on the acceptability of an alternative model for a given regulatory application. The document contains procedures for conducting both the technical evaluation of the model and the field test or performance evaluation. An example problem that focuses on the design and execution of the protocol for conducting a field performance evaluation is also included in that document.

This section discusses the use of alternate modeling techniques and defines three situations when alternative models may be used.

3.2.2 Recommendations

Determination of acceptability of a model is a Regional Office responsibility. Where the Regional Administrator or reviewing authority finds that an alternative model is more appropriate than a preferred model, that model may be used subject to the recommendations below. This finding will normally result from a determination that (1) a preferred air quality model is not appropriate for the particular application; or (2) a more appropriate model or analytical procedure is available and is applicable.

An alternative model should be evaluated from both a theoretical and a performance perspective before it is selected for use. There are three separate conditions under which such a model will normally be approved for use: (1) If a demonstration can be made that the model produces

concentration estimates equivalent to the estimates obtained using a preferred model; (2) if a statistical performance evaluation has been conducted using measured air quality data and the results of that evaluation indicate the alternative model performs better for the application than a comparable model in appendix A; and (3) if there is no preferred model for the specific application but a refined model is needed to satisfy regulatory requirements. Any one of these three separate conditions may warrant use of an alternative model. Some alternative models known to be available to the public that are applicable for selected situations are contained in appendix B. However, inclusion there does not infer any unique status relative to other alternative models that are being or will be developed for the future.

Equivalency is established by demonstrating that the maximum or highest, second highest concentrations are within two percent of the estimates obtained from the preferred model. The option to show equivalency is intended as a simple demonstration of acceptability for an alternative model that is so nearly identical (or contains options that can make it identical) to a preferred model that it can be treated for practical purposes as the preferred model. Two percent was selected as the basis for equivalency since it is a rough approximation of the fraction that PSD Class I increments are of the NAAQS for SO₂, i.e., the difference in concentrations that is judged to be significant. However, this demonstration is not intended to preclude the use of models that are not equivalent. They may be used when one of two other conditions identified below are satisfied.

The procedures and techniques for determining the acceptability of a model for an individual case based on superior performance is contained in the document entitled "Interim Procedures for Evaluating Air Quality Models," (15) and should be followed, as appropriate. Preparation and implementation of an evaluation protocol which is acceptable to both control agencies and regulated industry is an important element in such an evaluation.

When no appendix A model is applicable to the modeling problem, an alternative refined model may be used provided that:

1. The model can be demonstrated to be applicable to the problem on a theoretical basis, and
2. the data bases which are necessary to perform the analysis are available and adequate, and
- 3a. performance evaluations of the model in similar circumstances have shown that the model is not biased toward underestimates (examples of such circumstances include long range transport and shoreline fumigation), or
- 3b. after consultation with the EPA Regional Office, a second model is selected as a baseline or reference point for performance and the interim procedures (15) are then used to demonstrate that the proposed model performs better than the reference model (an example of such circumstances includes complex terrain).

3.3 Availability of Supplementary Modeling Guidance

The Regional Administrator has the authority to select models that are appropriate for use in a given situation. However, there is a need for assistance and guidance in the selection process so that fairness and consistency in modeling decisions is fostered among the various Regional Offices and the States. To satisfy that need, EPA established the Model Clearinghouse and also holds periodic workshops with headquarters, Regional Office and State modeling representatives.

3.3.1 The Model Clearinghouse

3.3.1.1 Discussion

The Model Clearinghouse is the single EPA focal point for review of air quality simulation models proposed for use in specific regulatory applications. Details concerning the Clearinghouse and its operation are found in the document, "Model Clearinghouse: Operational Plan." (6) Three primary functions of the Clearinghouse are:

- (1) Review of decisions proposed by EPA Regional Offices on the use of modeling techniques and data bases.
- (2) Periodic visits to Regional Offices to gather information pertinent to regulatory model usage.
- (3) Preparation of an annual report summarizing activities of the Clearinghouse including specific determinations made during the course of the year.

3.3.1.2 Recommendations

The Regional Administrator may request assistance from the Model Clearinghouse after an initial evaluation and decision has been reached concerning the application of a model, analytical technique or data base in a particular regulatory action. The Clearinghouse may also consider and evaluate the use of modeling techniques submitted in support of any regulatory action. Additional responsibilities are: (1) Review proposed action for consistency with agency policy; (2) determine technical adequacy; and (3) make recommendations concerning the techniques or data base.

3.3.2 Regional Meteorologists Workshops

3.3.2.1 Discussion

EPA conducts an annual in-house workshop for the purpose of mutual discussion and problem resolution among Regional Office modeling specialists, EPA research modeling experts, EPA Headquarters modeling and regulatory staff and representatives from State modeling programs. A summary of the issues resolved at previous workshops was issued in 1981 as "Regional Workshops on Air Quality Modeling: A Summary Report." (17) That report clarified procedures not specifically defined in the 1978 guideline and was issued to ensure the consistent interpretation of model requirements from Region to Region. Similar workshops for the purpose of clarifying guideline procedures or providing detailed instructions for the use of those procedures are anticipated in the future.

3.3.2.2 Recommendations

The Regional Office should always be consulted for information and guidance concerning modeling methods and

interpretations of modeling guidance, and to ensure that the air quality model user has available the latest most up-to-date policy and procedures.

4.0 SIMPLE-TERRAIN STATIONARY-SOURCE MODELS

4.1 Discussion

Simple terrain, as used here, is considered to be an area where terrain features are all lower in elevation than the top of the stack of the source(s) in question. The models recommended in this section are generally used in the air quality impact analysis of stationary sources for most criteria pollutants. The averaging time of the concentration estimates produced by these models ranges from 1 hour to an annual average.

Model evaluation exercises have been conducted to determine the "best, most appropriate point source model" for use in simple terrain. (8, 12) However, no one model has been found to be clearly superior. Thus, based on past use, public familiarity, and availability CRSTER remains the recommended model for rural, simple terrain.

single point source applications. Similar determinations were made for the other refined models that are identified in the following sections.

4.2 Recommendations.

4.2.1 Screening Techniques

The EPA document "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10R: Procedures for Evaluating Air Quality Impact of New Stationary Sources" 18 contains screening procedures that should be used if the source is in simple terrain. A computerized version of the Volume 10R screening technique for use in simple terrain (urban and rural) is available in UNAMAP" 19 as PTPLU-2.

All screening procedures should be adjusted to the site and problem at hand. Close attention should be paid to whether the area should be classified urban or rural in accordance with Section 8.2.8. The climatology of the area should be studied to help define the worst-case meteorological conditions. Agreement should be reached between the model user and the reviewing authority on the choice of the screening

model for each analysis, and on the input data as well as the ultimate use of the results.

4.2.2 Refined Analytical Techniques

Table 4-1 lists preferred models for selected applications. These preferred models should be used for the sources, land use categories and averaging times indicated in the table. A brief description of each of these models is found in appendix A. Also listed in that appendix are the model input requirements, the standard options that should be selected when running the program and output options.

When modeling for compliance with short term NAAQS and PSD increments is of primary concern, the short term models listed in Table 4-1 may also be used to provide long term concentration estimates. When modeling for sources for which long term standards alone are applicable (e.g., lead), then the long term models should be used.

The conversion from long term to short term concentration averages by any transformation technique is not acceptable in regulatory applications.

TABLE 4-1.— PREFERRED MODELS FOR SELECTED APPLICATIONS IN SIMPLE TERRAIN

	Land Use	Model ¹
<i>Short Term (1-24 hours):</i>		
Single Source	Rural	CRSTER
Multiple Source	Urban	RAM
Complicated Sources ²	Rural	MPTER
Buoyant Industrial Line Sources	Urban	RAM
Rural/Urban	Rural/Urban	ISCT
Rural	Rural	BLP
<i>Long Term (monthly, seasonal or annual):</i>		
Single Source	Rural	CRSTER
Multiple Source	Urban	RAM
Complicated Sources ²	Rural	MPTER
Buoyant Industrial Line Sources	Urban	CDM 2.0 or RAM ³
Rural/Urban	Rural/Urban	ISCLT
Rural	Rural	BLP

¹ Several of these models contain options which allow them to be interchanged. For example, ISCT can be substituted for CRSTER and equivalent, if not identical, concentration estimates obtained. Similarly, for a point source application, MPTER with urban option can be substituted for RAM. Where a substitution is convenient to the user and equivalent estimates are assured, it may be made. The models as listed here reflect the applications for which they were originally intended.

² Complicated sources are sources with special problems such as aerodynamic downwash, particle deposition, volume and area sources, etc.

³ If only a few sources in an urban area are to be modeled, RAM should be used.

5.0 Model Use in Complex Terrain

5.1 Discussion

For the purpose of this guideline, complex terrain is defined as terrain exceeding the height of the stack being modeled. Complex terrain dispersion models are normally applied to stationary sources of pollutants such as SO₂ and particulates.

Although the need for refined complex terrain dispersion models has been acknowledged for several years, adequate refined models have not been developed. The lack of detailed, descriptive data bases and basic knowledge concerning the behavior of atmospheric variables in the vicinity of complex terrain presents a considerable obstacle to the solution of the problem and the development of refined models.

A workshop (20) of invited complex terrain experts was held by the American Meteorological Society as a part of the AMS-

EPA Cooperative Agreement in May of 1983. Several major complex terrain problems were identified at this workshop; among them were: (1) Valley stagnation, (2) valley fumigation, (3) downwash on the leeside of terrain obstacles; and (4) the identification of conditions under which plume impaction can occur.

A first step toward the solution of two of these problems has been taken in the multi-year EPA Complex Terrain Model Development project. (21,22,23,24) One product of this project is expected to be a model suitable for regulatory application to plume impaction problems in complex terrain. In addition, insight into the leeside effects problem is also anticipated. Completion of the project is not expected before late 1987. Preliminary results have identified at least two concepts that have important implications for the regulatory application of models in complex terrain and

will require further detailed study and evaluation. First, plume impaction resulting in high concentrations was observed to occur during the field study as well as in supporting fluid modeling studies. (21) Further, the occurrence of impaction was linked to a "critical streamline" that separates flow around an obstacle from flow over an obstacle. Second, high concentrations were also observed to occur in the lee of the obstacle and were of sufficient magnitude to indicate that this phenomenon should be considered, if appropriate, in the determination of source impacts. (22)

To date most projects have been designed to identify plume behavior in complex terrain and to define the meteorological variables influencing that behavior. Until such time as it is possible to develop and evaluate a model based on the quantification of the meteorological and plume parameters identified in these studies, existing algorithms

adapted to site-specific complex terrain situations are all that are available. The methods discussed in this section should be considered screening, or "refined" screening, techniques and not refined dispersion models.

5.2 Recommendations

The following recommendations apply primarily to the situations where the impaction of plumes on terrain at elevations equal to or greater than the plume centerline during stable atmospheric conditions are determined to be the problem. The evaluation of other concentrations should be considered after consultation with the Regional Office. However, limited guidance on calculation of concentrations between stack height and plume centerline is provided.

Models developed for specific uses in complex terrain will be considered on a case-by-case basis after a suitable demonstration of their technical merits and an evaluation using measured on-site data following the procedures in "Interim Procedures for the Evaluation of Air Quality Models." (15) Since the location of plume centerline is as important a concern in complex terrain as dispersion rates, it should be noted that the dispersion models combined with a wind field analysis model should be superior to an assumption of straight-line plume travel. Such hybrid modeling techniques are also acceptable, after the appropriate demonstration and evaluation.

5.2.1 Screening Techniques

In the absence of an approved case-specific, refined, complex terrain model, four screening techniques are currently available to aid in the evaluation of concentrations due to plume impaction during stable conditions: the Valley Screening Technique as outlined in the Valley Model's User's Guide, (19, 25) COMPLEX I, (19) SHORTZ/LONGZ, (26) and the Rough Terrain Dispersion Model (RTDM) (91) in its prescribed mode described below. These methods should be used only to calculate concentrations at receptors whose elevations are greater than or equal to plume height. Receptors below stack height should be modeled using a preferred simple terrain model (see chapter 4). Receptors between stack height and plume height should be modeled with both complex terrain and simple terrain models and the highest concentration used. (For the simple terrain models, terrain may have to be "chopped-off" at stack height, since these models are frequently limited to receptors no greater than stack height.)

If a violation of any NAAQS or the controlling increment is indicated by using the Valley Screening Technique, a second- or third-level screening technique may be used. A site-specific data base of at least one full year of meteorological data is preferred for use with either the second- or third-level screening technique. If more data are available, they should be used.

Meteorological data used in the analysis should be reviewed for both spatial and temporal representativeness.

Placement of receptors requires very careful attention when modeling in complex terrain. Often the highest concentrations are predicted to occur under very stable

conditions, when the plume is near, or impinges on, the terrain. The plume under such conditions may be quite narrow in the vertical, so that a change in a receptor to a location where the terrain is as little as 25 meters or so higher or lower may make a substantial change in the predicted concentration. Receptors within about a kilometer of the source may be even more sensitive to location. Thus, a very dense array of receptors may be required in some cases. In order to avoid excessively large computer runs due to such a large array of receptors, it is often desirable to model the area twice. The first model run would use a moderate number of receptors carefully located over the area of interest. The second model run would use a more dense array of receptors in areas showing potential for high concentrations, as indicated by the results of the first model run.

5.2.1.1 Initial Screening Technique.

The initial screen to determine 24-hour averages is the Valley Screening Technique. This technique uses the Valley Model with the following worst-case assumptions for rural areas: (1) P-G stability "F"; (2) wind speed of 2.5 m/s; and (3) 6 hours of occurrence. For urban areas the stability should be changed to "P-G stability E."

When using the Valley Screening Technique to obtain 24-hour average concentrations the following apply: (1) Multiple sources should be treated individually and the concentrations for each wind direction summed; (2) only one wind direction should be used (see User's Guide, (25) page 2-15) even if individual runs are made for each source; (3) for buoyant sources, the BID option may be used, and the option to use the 2.6 stable plume rise factor should be selected; (4) if plume impaction is likely on any elevated terrain closer to the source than the distance from the source to the final plume rise, then the transitional (or gradual) plume rise option for stable conditions should be selected.

The standard polar receptor grid found in the Valley Model User's Guide may not be sufficiently dense for all analyses if only one geographical scale factor is used. The user should choose an additional set of receptors at appropriate downwind distances whose elevations are equal to plume height minus 10 meters. Alternatively, the user may exercise the "VALLEY equivalent" option in COMPLEX I and note the comments above on the placement of receptors in complex terrain models.

5.2.1.2 Second-Level Screening Technique (Rural).

If the area is rural, the suggested second-level screening technique is COMPLEX I for all averaging times. COMPLEX I is a modification of the MPTER model that incorporates the plume impaction algorithm of the Valley Model. It is a multiple-source screening technique that accepts hourly meteorological data as input. The output is the same as the normal MPTER output. When using COMPLEX I the following options should be selected: (1) Set terrain adjustment IOPT(1)=1; (2) set buoyancy induced dispersion IOPT(4)=1; (3) set IOPT(25)=1; (4) set the terrain adjustment values to 0.5, 0.5 0.5, 0.0, 0.0, (respectively for 6 stability classes); and (5) set Z MIN=10.

Gradual plume rise should be used to estimate concentrations at nearby elevated receptors, if plume impaction is likely on any elevated terrain closer to the source than the distance from the source to the final plume rise (see section 8.2.5).

5.2.1.3 Second-Level Screening Technique (Urban).

If the source is located in an urbanized (section 8.2.8) complex terrain valley, then the suggested second-level screening technique is SHORTZ for short term averages or LONGZ for long term averages. (SHORTZ and LONGZ may be used as screening techniques in these complex terrain applications without demonstration and evaluation. Application of these models in other than urbanized valley situations will require the same evaluation and demonstration procedures as are required for all appendix B models.)

Both SHORTZ and LONGZ have a number of options. When using these models as screening techniques for urbanized valley applications, the options listed in table 5-1 should be selected.

5.2.1.4 Third Level Screening Technique (Rural).

If a violation of any NAAQS or the controlling increment is indicated by using the second-level screening technique, a third-level screening technique may be used for rural applications. RTDM with the options specified in Table 5-2 may be used as a screening technique in rural complex terrain situations without demonstration and evaluation.

The RTDM¹ screening technique can provide a more refined concentration estimate if on-site wind speed and direction characteristic of plume dilution and transport are used as input to the model. In complex terrain, these winds can seldom be estimated accurately from the standard surface (10m level) measurements. Therefore, in order to increase confidence in model estimates, EPA recommends that wind data input to RTDM should be based on fixed measurements at stack top height. For stacks greater than 100m, the measurement height may be limited to 100m in height relative to stack base. However, for very tall stacks see guidance in section 9.3.3.2. This recommendation is broadened to include wind data representative of plume transport height where such data are derived from measurements taken with remote sensing devices such as SODAR. The data from both fixed and remote measurements should meet quality assurance and recovery rate requirements. The user should also be aware that RTDM in the screening mode accepts the input of measured wind speeds at only one height. The default values for the wind speed profile exponents shown in Table 5-2 are used in the model to determine the wind speed at other heights. RTDM uses wind speed at stack top to calculate the plume rise and the critical dividing streamline height, and the wind speed at plume transport level to calculate dilution. RTDM treats wind direction as constant with height.

¹ The RTDM model is available as part of Change 3 to UNAMAP Version 8.

RTDM makes use of the "critical dividing streamline" concept and thus treats plume interactions with terrain quite differently from other models such as SHORTZ and COMPLEX I. The plume height relative to the critical dividing streamline determines whether the plume impacts the terrain, or is lifted up and over the terrain. The receptor spacing to identify maximum impact concentrations is quite critical depending on the location of the plume in the vertical. It is suggested that an analysis of the expected plume height relative to the height of the critical dividing streamline be performed for differing meteorological conditions in order to help develop an appropriate array of receptors. Then it is advisable to model the area twice according to the suggestions in section 5.2.1.

5.2.1.5 Restrictions.

For screening analyses using the Valley Screening Technique, Complex I or RTDM, a sector greater than $22\frac{1}{2}^\circ$ should not be allowed. Full ground reflection should always be used in the VALLEY Screening Technique and COMPLEX I.

5.2.2 Refined Analytical Techniques

When the results of the screening analysis demonstrate a possible violation of NAAQS or the controlling PSD increments, a more refined analysis may need to be conducted.

Since there are no refined techniques currently recommended for complex terrain applications, any refined model used should be applied in accordance with section 3.2. In particular, use of the "Interim Procedures for Evaluating Air Quality Models" (15) and a second model to serve as a baseline or reference point for the comparison should be used in a demonstration of applicability. New approaches to improve the ability of models to realistically simulate atmospheric physics, for example hybrid models which incorporate an accurate wind field analysis, will ultimately provide more appropriate tools for analyses.

In the absence of an appropriate refined model, screening results may need to be used to determine air quality impact and/or emission limits.

TABLE 5-1.—PREFERRED OPTIONS FOR THE SHORTZ/LONGZ COMPUTER CODES WHEN USED IN A SCREENING MODE

Option	Selection
I Switch 17	Set=1 (urban option). Use default values (0.6 entrainment coefficient).
GAMMA 1	Always default to stable.
GAMMA 2	Set=0 (50 m rectilinear expansion distance).
XRY	Do not use. (Applicable only in flat terrain).
NS, VS, FRQ (SHORTZ) (particle size, etc.).	
NUS, VS, FRQ (LONGZ) (particle size, etc.).	
ALPHA	Select 0.9.
SIGEPU (dispersion parameters).	Use Cramer curves (default).
SIGAPU (dispersion parameters).	
P (wind profile)	If site-specific turbulence data are available, see the Regional Office for advice. Select default values given in table 2-2 of User's Instructions. If site-specific data are available, see the Regional Office for advice.

TABLE 5-2.—PREFERRED OPTIONS FOR THE RTDM COMPUTER CODE WHEN USED IN A SCREENING MODE

Parameter	Variable	Value	Remarks
PR001-003	SCALE		Scale factors assuming horizontal distance is in kilometers, vertical distance is in feet, and wind speed is in meters per second.
PR004	ZWIND1	Wind Measurement Height	See section 5.2.1.4.
	ZWIND2	Not used	Height of second anemometer.
	IDILUT	1	Dilution wind speed scaled to plume height.
	ZA	0 (default)	Anemometer-terrain height above stack base.
PR005	EXPON	.09, .11, .12, .14, .2, .3 (default)	Wind profile exponents.
PR006	ICOEF	3 (default)	Briggs Rural/ASME (1979) dispersion parameters.
PR009	IPPP	0 (default)	Partial plume penetration, not used.
PR010	IBUOY	1 (default)	Buoyancy-enhanced dispersion is used.
PR011	ALPHA	3.162 (default)	Buoyancy-enhanced dispersion coefficient.
PR012	IDMX	1 (default)	Unlimited mixing height for stable conditions.
PR013	ITRANS	1 (default)	Transitional plume rise is used.
PR014	TERCOR	6*0.5 (default)	Plume path correction factors.
PR015	RVPTG	0.02, 0.035 (default)	Vertical potential temperature gradient values for stabilities E and F.
PR020	ITIPD	1	Stack-tip downwash is used.
PR022	ISHEAR	0 (default)	Wind shear, not used.
PR023	IREFL	1 (default)	Partial surface reflection is used.
PR016 to 019; 021; and 024	SECTOR	2 (default)	Sector averaging.
	IY, IZ, IRVPTG, IHVPTG; IEPS; IEMIS	6*22.5 (default)	Using 22.5° sectors.
		0	Hourly values of turbulence, vertical potential temperature gradient, wind speed profile exponents, and stack emissions are not used.

6.0 Models for Ozone, Carbon Monoxide and Nitrogen Dioxide

6.1 Discussion.

Models discussed in this section are applicable to pollutants often associated with mobile sources, e.g., ozone (O_3), carbon monoxide (CO) and nitrogen dioxide (NO_2). Where stationary sources of CO and NO_2 are of concern, the reader is referred to sections 4 and 5.

A control agency whose jurisdiction contains areas with significant ozone

problems and who has sufficient resources and data to use a photochemical dispersion model is encouraged to do so. Experience with and evaluations of the Urban Airshed Model show it to be an acceptable, refined approach. Better data bases are becoming available that support the more sophisticated analytical procedures. However, empirical models (e.g., EKMA) fill the gap between more sophisticated photochemical dispersion model 5 and proportional (rollback) modeling techniques and may be the only applicable

procedure if the data bases available are insufficient for refined dispersion modeling.

Carbon monoxide is generally considered to be a problem only in specific areas with high numbers of vehicles or slow moving traffic. For that reason, frequently only "hot spots" or project level analyses are needed in SIP revisions.

Nitrogen oxides are reactive and also an important contribution to the photochemical ozone problem. They are usually of most concern in areas of high ozone concentrations. Unless suitable

photochemical dispersion models are used, assumptions regarding the conversion of NO to NO₂ are required when modeling. Site-specific conversion factors may be developed. If site-specific conversion factors are not available or photochemical models are not used, NO₂ modeling should be considered only a screening procedure.

6.2 Recommendations

6.2.1 Models for Ozone.

The Urban Airshed Model (27) is recommended for photochemical or reactive pollutant modeling applications involving entire urban areas. To ensure proper execution of this numerical model, users must satisfy the extensive input data requirements for the model as listed in appendix A and the users guide. Users are also referred to the "Guideline for Applying the Airshed Model to Urban Areas" (28) for further information on data base requirements, kinds of tasks involved in the model application, and the overall level of resources required.

The empirical model, City-specific EKMA (29,30,31,32,33) is an acceptable approach for urban ozone applications.

Appendix B contains some additional models that may be applied on a case-by-case basis for photochemical or reactive pollutant modeling. Other photochemical models, including multi-layered trajectory models, that are available may be used if shown to be appropriate. Most photochemical dispersion models require emission data on individual hydrocarbon species and may require three dimensional meteorological information on an hourly basis. Reasonably sophisticated computer facilities are also often required. Because the input data are not universally available and studies to collect such data are very resource intensive, there are only limited evaluations of those models.

Proportional (rollback/forward) modeling is no longer an acceptable procedure for evaluating ozone control strategies.

6.2.2 Models for Carbon Monoxide.

Carbon monoxide modeling for the development of SIP-required control strategies should follow the guidance provided in the "Carbon Monoxide Hot Spot Guidelines" (34) or in Volume 9 of the "Guidelines for Air Quality Maintenance Planning and Analysis." (35) These volumes provide screening techniques for locating and quantifying worst case carbon monoxide concentrations, and for establishing background values; they also provide methods for assessing carbon monoxide concentrations at multiple locations across the urban area. If results from screening techniques or measured carbon monoxide levels in an urban area are clearly well below the standards and expected to remain below the standard, or it can be demonstrated that the Federal Motor Vehicle Control Program will provide the needed CO reductions, then urban area-wide strategies may be evaluated using a modified rollback or proportional model approach.

Project analysis of mobile source emissions of carbon monoxide should first include an analysis using the screening techniques referenced above. If concentrations using these techniques exceed the NAAQS, then refined techniques are needed to determine

compliance with the standards. CALINE3 (see appendix A) is the preferred model for use when refined analyses are required. For free flow sources, the latest version of mobile source emission factors are required for input to CALINE3, and for interrupted flow sources (i.e., signalized intersections), procedures to calculate modal emission factors as contained in Worksheet 2 of the "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9" (35) are recommended.

Situations that require the use of refined techniques on an urban-wide basis should be considered on a case-by-case basis. If a suitable model is available and the data and technical competence required for its use are available, then such a model should be considered.

Where point sources of CO are of concern, they should be modeled using the screening and preferred techniques of sections 4 or 5.

6.2.3 Models for Nitrogen Dioxide (Annual Average).

A three-tiered screening approach is recommended to obtain annual average estimates of NO₂ from point sources:

a. Initial screen: Use an appropriate Gaussian model from Appendix A to estimate the maximum annual average concentration and assume a total conversion of NO to NO₂. If the concentration exceeds the NAAQS for NO₂, proceed to the 2nd level screen.

b. 2nd level screen: Apply the Ozone Limiting Method (36) to the annual NO₂ estimate obtained in (a) above using a representative average annual ozone concentration. If the result is still greater than the NAAQS, the more refined Ozone Limiting Method in the 3rd level screen should be applied.

c. 3rd level screen: Apply the Ozone Limiting Method separately for each hour of the year or multi-year period. Use representative hourly NO₂ background and ozone levels in the calculations.

In urban areas, a proportional model may be used as a preliminary assessment to evaluate control strategies for multiple sources (mobile and area) of NO_x; concentrations resulting from major point sources should be estimated separately as discussed above, then added to the impact of area sources. An acceptable screening technique for urban complexes is to assume that all NO_x is emitted in the form of NO₂ and to use a model from Appendix A for nonreactive pollutants to estimate NO₂ concentrations. A more accurate estimate can be obtained by (1) calculating the annual average concentrations of NO_x with an urban model, and (2) converting these estimates to NO₂ concentrations based on a spatially averaged NO₂/NO_x annual ratio determined from an existing air quality monitoring network.

In situations where there are sufficient hydrocarbons available to significantly enhance the rate of NO to NO₂ conversion, the assumptions implicit in the Ozone Limiting Procedure may not be appropriate. More refined techniques should be considered on a case-by-case basis and agreement with the reviewing authority should be obtained. Such techniques should consider individual quantities of NO and NO₂ emissions, atmospheric transport and

dispersion, and atmospheric transformation of NO to NO₂. Where it is available site-specific data on the conversion of NO to NO₂ may be used. Photochemical dispersion models, if used for other pollutants in the area, may also be applied to the NO_x problem.

7.0 Other Model Requirements

7.1 Discussion

This section covers those cases where specific techniques have been developed for special regulatory programs. Most of the programs have, or will have when fully developed, separate guidance documents that cover the program and a discussion of the tools that are needed. The following paragraphs reference those guidance documents, when they are available. No attempt has been made to provide a comprehensive discussion of each topic since the reference documents were designed to do that. This section will undergo periodic revision as new programs are added and new techniques are developed.

Other Federal agencies have also developed specific modeling approaches for their own regulatory or other requirements. An example of this is the three-volume manual issued by the U.S. Department of Housing and Urban Development, "Air Quality Considerations in Residential Planning." (37) Although such regulatory requirements and manuals may have come about because of EPA rules or standards, the implementation of such regulations and the use of the modeling techniques is under the jurisdiction of the agency issuing the manual or directive.

The need to estimate impacts at distances greater than 50 km (the nominal distance to which EPA considers most Gaussian models applicable) is an important one especially when considering the effects from secondary pollutants. Unfortunately, models submitted to EPA have not as yet undergone sufficient field evaluation to be recommended for general use. Existing data bases from field studies at mesoscale and long range transport distances are limited in detail. This limitation is a result of the expense to perform the field studies required to verify and improve mesoscale and long range transport models. Particularly important and sparse are meteorological data adequate for generating three dimensional wind fields. Application of models to complicated terrain compounds the difficulty.

A current EPA agreement with Argonne National Laboratory, scheduled for completion in FY 1986, will result in the development of evaluation procedures for long range transport models. Models submitted to EPA will be tested with currently available data bases using these procedures. Similar research in this area is also being performed by others in EPA and other organizations. For the time being, however, long range and mesoscale transport models must be evaluated for regulatory use on a case-by-case basis.

7.2 Recommendations

7.2.1 Fugitive Dust/Fugitive Emissions.

Fugitive dust usually refers to the dust put into the atmosphere by the wind blowing over plowed fields, dirt roads or desert or sandy areas with little or no vegetation. Reentrained dust is that which is put into the air by reason of vehicles driving over dirt roads (or dirty roads) and dusty areas. Such sources can be characterized as line, area or volume sources. Emission rates may be based on site-specific data or values from the general literature.

Fugitive emissions are usually defined as emissions that come from an industrial source complex. They include the emissions resulting from the industrial process that are not captured and vented through a stack but may be released from various locations within the complex. Where such fugitive emissions can be properly specified, the ISC model, with consideration of gravitational settling and dry deposition, is the recommended model. In some unique cases a model developed specifically for the situation may be needed.

Due to the difficult nature of characterizing and modeling fugitive dust and fugitive emissions, it is recommended that the proposed procedure be cleared by the appropriate Regional Office for each specific situation before the modeling exercise is begun.

7.2.2 Particulate Matter.

Currently a proposed NAAQS for particulate matter includes provisions both for particles in the size range less than 10 micrometers (PM_{10}) and for Total Suspended Particulates (TSP). State Implementation Plans will be developed by States to attain and maintain this new standard when the standard is promulgated.

Screening techniques like those identified in section 4 are also applicable to PM_{10} and to large particles (TSP). It is recommended that subjectively determined values for "half-life" or pollutant decay not be used as a surrogate for particle removal. Conservative assumptions which do not allow removal or transformation are suggested for screening. Proportional models (rollback/forward) may not be applied for screening analysis, unless such techniques are used in conjunction with receptor modeling.

Refined models such as those in section 4 are recommended for both PM_{10} and TSP. However, where possible, particle size, gas-to-particle formation and their effect on ambient concentrations may be considered. For urban-wide refined analyses CDM 2.0 or RAM should be used. CRSTER and MPTER are recommended for point sources of small particles. For source-specific analyses of complicated sources, the ISC model is preferred. No model recommended for general use at this time accounts for secondary particulate formation or other transformations in a manner suitable for SIP control strategy demonstrations. Where possible, the use of receptor models (38, 39) in conjunction with dispersion models is encouraged to more precisely characterize the emissions inventory and to validate source specific impacts calculated by the dispersion model.

For those cases where no recommended technique is available or applicable, modeling approaches should be approved by

the appropriate Regional Office on a case-by-case basis. At this time analyses involving model calculations for distances beyond 50 km should also be justified on a case-by-case basis (see section 7.2.6).

7.2.3 Lead.

The air quality analyses required for lead implementation plans are given in §§ 51.83, 51.84 and 51.85 of 40 CFR part 51. Sections 51.83 and 51.85 require the use of a modified rollback model as a minimum to demonstrate attainment of the lead air quality standard but the use of a dispersion model is the preferred approach. Section 51.83 requires the analysis of an entire urban area if the measured lead concentration in the urbanized area exceeds a quarterly (three month) average of $4.0 \mu\text{g}/\text{m}^3$. Section 51.84 requires the use of a dispersion model to demonstrate attainment of the lead air quality standard around specified lead point sources. For other areas reporting a violation of the lead standard, § 51.85 requires an analysis of the area in the vicinity of the monitor reporting the violation. The NAAQS for lead is a quarterly (three month) average, thus requiring the use of modeling techniques that can provide long-term concentration estimates.

The SIP should contain an air quality analysis to determine the maximum quarterly lead concentration resulting from major lead point sources, such as smelters, gasoline additive plants, etc. For these applications the ISC model is preferred, since the model can account for deposition of particles and the impact of fugitive emissions. If the source is located in complicated terrain or is subject to unusual climatic conditions, a case-specific review by the appropriate Regional Office may be required.

In modeling the effect of traditional line sources (such as a specific roadway or highway) on lead air quality, dispersion models applied for other pollutants can be used. Dispersion models such as CALINE3 and APRAC-3 have been widely used for modeling carbon monoxide emissions from highways. However, where deposition is of concern, the line source treatment in ISC may be used. Also, where there is a point source in the middle of a substantial road network, the lead concentrations that result from the road network should be treated as background (see section 9.2); the point source and any nearby major roadways should be modeled separately using the ISC model.

To model an entire major urban area or to model areas without significant sources of lead emissions, as a minimum a proportional (rollback) model may be used for air quality analysis. The rollback philosophy assumes that measured pollutant concentrations are proportional to emissions. However, urban or other dispersion models are encouraged in these circumstances where the use of such models is feasible.

For further information concerning the use of models in the development of lead implementation plans, the documents "Supplementary Guidelines for Lead Implementation Plans," (40) and "Updated Information on Approval and Promulgation of Lead Implementation Plans," (41) should be consulted.

7.2.4 Visibility.

The visibility regulations as promulgated in December 1980¹ require consideration of the effect of new sources on the visibility values of Federal Class I areas. The state of scientific knowledge concerning identifying, monitoring, modeling, and controlling visibility impairment is contained in an EPA report "Protecting Visibility: An EPA Report to Congress." (42) At the present time, "although information derived from modeling and monitoring can, in some cases, aid the States in development and implementation of the visibility program,"² the States are not currently required to establish monitoring networks or perform modeling analyses. However, a monitoring strategy is required. As additional knowledge is gained, guidance on "plume blight" and regional scale models will be provided, as appropriate.

References 43, 44, and 45 may also be useful when visibility evaluations are needed. Appendix B contains two models developed for application to visibility problems.

7.2.5 Good Engineering Practice Stack Height.

The use of stack height credit in excess of Good Engineering Practice (GEP) stack height is prohibited in the development of emission limitations by 40 CFR 51.12 and 40 CFR 51.18. The definition of GEP stack height is contained in 40 CFR 51.1. Methods and procedures for making the appropriate stack height calculations, determining stack height credits and an example of applying those techniques are found in references 46, 47, 48, and 49.

If stacks for new or existing major sources are found to be less than the height defined by EPA's refined formula for determining GEP height,¹ then air quality impacts associated with cavity or wake effects due to the nearby building structures should be determined. Detailed downwash screening procedures (17) for both the cavity and wake regions should be followed. If more refined concentration estimates are required, the Industrial Source Complex (ISC) model contains algorithms for building wake calculations and should be used. Fluid modeling can provide a great deal of additional information for evaluating and describing the cavity and wake effects.

7.2.6 Long Range Transport (beyond 50 km).

Section 165(e) of the Clean Air Act requires that suspected significant impacts on PSD Class I areas be determined. However, the useful distance to which most Gaussian models are considered accurate for setting emission limits is 50 km. Since in many cases Class I areas may be threatened at distances greater than 50 km from new sources, some procedure is needed to (1) determine if a significant impact will occur, and (2) identify the model to be used in setting an emission limit if the Class I increments are threatened (models for this purpose should be approved for use on a case-by-case basis as required in section 3.2). This procedure and the models

¹ 45 FR 80084.

² 40 CFR 51.3000-307

³ The EPA refined formula height is defined as $H + 1.5L$ (refer to reference 46).

selected for use should be determined in consultation with the EPA Regional Office and the appropriate Federal Land Manager (FLM). While the ultimate decision on whether a Class I area is adversely affected is the responsibility of the permitting authority, the FLM has an affirmative responsibility to protect air quality related values that may be affected.

LRT models for use beyond 50 km and for other than PSD purposes also should be selected on a case-by-case basis. Normally, use of these models will require an acceptable demonstration of applicability and an evaluation of model performance if possible (See section 3.2).

7.2.7 Modeling Guidance for Other Government Programs

When using the models recommended or discussed in this guideline in support of programmatic requirements not specifically covered by EPA regulations, the model user should consult the appropriate Federal or State agency to ensure the proper application and use of that model. For modeling associated with PSD permit applications that involve a Class I area, the appropriate Federal Land Manager should be consulted on all modeling questions.

The Offshore and Coastal Dispersion (OCD) model (92) was developed by the Minerals Management Service and is recommended for estimating air quality impact from offshore sources on onshore flat terrain areas. The OCD model is not recommended for use in air quality impact assessments for onshore sources.

8.0 General Modeling Considerations

8.1 Discussion

This section contains recommendations concerning a number of different issues not explicitly covered in other sections of this guide. The topics covered here are not specific to any one program or modeling area but are common to nearly all modeling analyses.

8.2 Recommendations

8.2.1 Design Concentrations

8.2.1.1 Design Concentrations for SO₂, Particulate Matter, Lead, and NO_x.

An air quality analysis is required to determine if the source will (1) cause a violation of the NAAQS, or (2) cause or contribute to air quality deterioration greater than the specified allowable PSD increment. For the former, background concentration (See section 9.2) should be added to the estimated impact of the source to determine the design concentration. For the latter, the design concentration includes impact from all increment consuming sources.

If the air quality analyses are conducted using the period of meteorological input data recommended in section 9.3.1.2 (e.g., 5 years of NWS data or one year of site-specific data), then the design concentration based on the highest, second-highest short term concentration or long term average, whichever is controlling, should be used to determine emission limitations to assess compliance with the NAAQS and to determine PSD increments.

When sufficient and representative data exist for less than a 5-year period from a

nearby NWS site, or when on-site data have been collected for less than a full continuous year, or when it has been determined that the on-site data may not be temporally representative, then the highest concentration estimate should be considered the design value. This is because the length of the data record may be too short to assure that the conditions producing worst-case estimates have been adequately sampled. The highest value is then a surrogate for the concentration that is not to be exceeded more than once per year (the wording of the deterministic standards). Also, the highest concentration should be used whenever selected worst-case conditions are input to a screening technique. This specifically applies to the use of techniques such as outlined in "Procedures for Evaluating Air Quality Impact of New Stationary Sources." (18)

If the controlling concentration is an annual average value and multiple years of data (on-site or NWS) are used, then the design value is the highest of the annual averages calculated for the individual years. If the controlling concentration is a quarterly average and multiple years are used, then the highest individual quarterly average should be considered the design value.

As long a period of record as possible should be used in making estimates to determine design values and PSD increments. If more than one year of site-specific data is available, it should be used.

8.2.1.2 Design Concentrations for Criteria Pollutants with Expected Exceedance Standards.

Specific instructions for the determination of design concentrations for criteria pollutants with expected exceedance standards are contained in special guidance documents for the preparation of State Implementation Plans for those pollutants. For all SIP revisions the user should check with the Regional Office to obtain the most recent guidance documents and policy memoranda concerning the pollutant in question.

8.2.2 Critical Receptor Sites

Receptor sites for refined modeling should be utilized in sufficient detail to estimate the highest concentrations and possible violations of a NAAQS or a PSD increment. In designing a receptor network, the emphasis should be placed on receptor resolution and location, not total number of receptors. The selection of receptor sites should be a case-by-case determination taking into consideration the topography, the climatology, monitor sites, and the results of the initial screening procedure. For large sources [those equivalent to a 500 MW power plant] and where violations of the NAAQS or PSD increment are likely, 360 receptors for a polar coordinate grid system and 400 receptors for a rectangular grid system, where the distance from the source to the farthest receptor is 10 km, are usually adequate to identify areas of high concentration. Additional receptors may be needed in the high concentration location if greater resolution is indicated by terrain or source factors.

8.2.3 Dispersion Coefficients

Gaussian models used in most applications should employ dispersion coefficients

consistent with those contained in the preferred models in appendix A. Factors such as averaging time, urban/rural surroundings, and type of source (point vs. line) may dictate the selection of specific coefficients.

Generally, coefficients used in appendix A models are identical to, or at least based on, Pasquill-Gifford coefficients (50) in rural areas and McElroy-Pooler (51) coefficients in urban areas.

Research is continuing toward the development of methods to determine dispersion coefficients directly from measured or observed variables. (52, 53) No method to date has proved to be widely applicable. Thus, direct measurement, as well as other dispersion coefficients related to distance and stability, may be used in Gaussian modeling only if a demonstration can be made that such parameters are more applicable and accurate for the given situation than are algorithms contained in the preferred models.

Buoyancy-induced dispersion (BID), as identified by Pasquill, (54) is included in the preferred models and should be used where buoyant sources, e.g., those involving fuel combustion, are involved.

8.2.4 Stability Categories

The Pasquill approach to classifying stability is generally required in all preferred models (appendix A). The Pasquill method, as modified by Turner, (55) was developed for use with commonly observed meteorological data from the National Weather Service and is based on cloud cover, insolation and wind speed.

Procedures to determine Pasquill stability categories from other than NWS data are found in section 9.3. Any other method to determine Pasquill stability categories must be justified on a case-by-case basis.

For a given model application where stability categories are the basis for selecting dispersion coefficients, both σ_z and σ_x should be determined from the same stability category. "Split sigmas" in that instance are not recommended.

Sector averaging, which eliminates the σ_z term, is generally acceptable only to determine long term averages, such as seasonal or annual, and when the meteorological input data are statistically summarized as in the STAR summaries. Sector averaging is, however, commonly acceptable in complex terrain screening methods.

8.2.5 Plume Rise

The plume rise methods of Briggs (56, 57) are incorporated in the preferred models and are recommended for use in all modeling applications. No provisions in these models are made for fumigation or multistack plume rise enhancement or the handling of such special plumes as flares; these problems should be considered on a case-by-case basis.

Since there is insufficient information to identify and quantify dispersion during the transitional plume rise period, gradual plume rise is not generally recommended for use. There are two exceptions where the use of gradual plume rise is appropriate: (1) In complex terrain screening procedures to

determine close-in impact; (2) when calculating the effects of building wakes. The building wake algorithm in the ISC model incorporates gradual plume rise calculations. If the building wake is calculated to affect the plume for any hour, gradual plume rise is also used in downwind dispersion calculations to the distance of final plume rise, after which final plume rise is used.

Stack tip downwash generally occurs with poorly constructed stacks and when the ratio of the stack exit velocity to wind speed is small. An algorithm developed by Briggs (Hanna, et al.) (57) is the recommended technique for this situation and is found in the point source preferred models.

Where aerodynamic downwash occurs due to the adverse influence of nearby structures, the algorithms included in the ISC model (58) should be used.

8.2.6 Chemical Transformation

The chemical transformation of SO_2 emitted from point sources or single industrial plants in rural areas is generally assumed to be relatively unimportant to the estimation of maximum concentrations when travel time is limited to a few hours. However, in urban area, where synergistic effects among pollutants are of considerable consequence, chemical transformation rates may be of concern. In urban area applications, a half-life of 4 hours (55) may be applied to the analysis of SO_2 emissions. Calculations of transformation coefficients from site-specific studies can be used to define a "half-life" to be used in a Gaussian model with any travel time, or in any application, if appropriate documentation is provided. Such conversion factors for pollutant half-life should not be used with screening analyses.

Complete conversion of NO to NO_2 should be assumed for all travel time when simple screening techniques are used to model point source emissions of nitrogen oxides. If a Gaussian model is used, and data are available on seasonal variations in maximum ozone concentrations, the Ozone Limiting Method (36) is recommended. In refined analyses, case-by-case conversion rates based on technical studies appropriate to the site in question may be used. The use of more sophisticated modeling techniques should be justified for individual cases.

Use of models incorporating complex chemical mechanisms should be considered only on a case-by-case basis with proper demonstration of applicability. These are generally regional models not designed for the evaluation of individual sources but used primarily for region-wide evaluations. Visibility models also incorporate chemical transformation mechanisms which are an integral part of the visibility model itself and should be used in visibility assessments.

8.2.7 Gravitational Settling and Deposition

An "infinite half-life" should be used for estimates of total suspended particulate concentrations when Gaussian models containing only exponential decay terms for treating settling and deposition are used.

Gravitational settling and deposition may be directly included in a model if either is a significant factor. At least one preferred

model (ISC) contains settling and deposition algorithms and is recommended for use when particulate matter sources can be quantified and settling and deposition are problems.

8.2.8 Urban/Rural Classification

The selection of either rural or urban dispersion coefficients in a specific application should follow one of the procedures suggested by Irwin (59) and briefly described below. These include a land use classification procedure or a population based procedure to determine whether the character of an area is primarily urban or rural.

Land Use Procedure: (1) Classify the land use within the total area, A_o , circumscribed by a 3 km radius circle about the source using the meteorological land use typing scheme proposed by Auer (60); (2) if land use types I1, I2, C1, R2, and R3 account for 50 percent or more of A_o , use urban dispersion coefficients; otherwise, use appropriate rural dispersion coefficients.

Population Density Procedure: (1) Compute the average population density, \bar{p} per square kilometer with A_o as defined above; (2) If \bar{p} is greater than 750 people/km², use urban dispersion coefficients; otherwise use appropriate rural dispersion coefficients.

Of the two methods the land use procedure is considered more definitive. Population density should be used with caution and should not be applied to highly industrialized areas where the population density may be low and thus a rural classification would be indicated, but the area is sufficiently built-up so that the urban land use criteria would be satisfied. In this case, the classification should already be "urban" and urban dispersion parameters should be used.

Sources located in an area defined as urban should be modeled using urban dispersion parameters. Sources located in areas defined as rural should be modeled using the rural dispersion parameters. For analyses of whole urban complexes, the entire area should be modeled as an urban region if most of the sources are located in areas classified as urban.

8.2.9 Fumigation

Fumigation occurs when a plume (or multiple plumes) is emitted into a stable layer of air and that layer is subsequently mixed to the ground either through convective transfer of heat from the surface or because of advection to less stable surroundings. Fumigation may cause excessively high concentrations but is usually rather short-lived at a given receptor. There are no recommended refined techniques to model this phenomenon. There are, however, screening procedures (see "Guidelines for Air Quality Maintenance Planning and Analysis Volume 10R: Procedures for Evaluating Air Quality Impact of New Stationary Sources") (18) that may be used to approximate the concentrations. Considerable care should be exercised in the use of the results obtained from the screening techniques.

Fumigation is also an important phenomenon on and near the shoreline of bodies of water. This can affect both individual plumes and area-wide emissions. Although models have been developed to address this problem, the evaluations so far

do not permit the recommendation of any specific technique.

The Regional Office should be contacted to determine the appropriate model for applications where fumigation is of concern.

8.2.10 Stagnation

Although both short and long term periods of very light winds are important in the identification of worst-case conditions, the models identified in this guideline cannot adequately simulate such conditions. If stagnation conditions are determined to be important to the analysis, then techniques specific to the situation and location must be developed. Such techniques might include empirical models or box models. Assistance from the appropriate Regional Office should be obtained prior to embarking on the development of such a procedure.

8.2.11 Calibration of Models

Calibration of long term multi-source models has been a widely used procedure even though the limitations imposed by statistical theory on the reliability of the calibration process for long term estimates are well known. (61) In some cases, where a more accurate model is not available, calibration may be the best alternative for improving the accuracy of the estimated concentrations needed for control strategy evaluations.

Calibration of short term models is not common practice and is subject to much greater error and misunderstanding. There have been attempts by some to compare short term estimates and measurements on an event-by-event basis and then to calibrate a model with results of that comparison. This approach is severely limited by uncertainties in both source and meteorological data and therefore it is difficult to precisely estimate the concentration at an exact location for a specific increment of time. Such uncertainties make calibration of short term models of questionable benefit. Therefore, short term model calibration is unacceptable.

9.0 Model Input Data

Data bases and related procedures for estimating input parameters are an integral part of the modeling procedure. The most appropriate data available should always be selected for use in modeling analyses. Concentrations can vary widely depending on the source data or meteorological data used. Input data are a major source of inconsistencies in any modeling analysis. This section attempts to minimize the uncertainty associated with data base selection and use by identifying requirements for data used in modeling. A checklist of input data requirements for modeling analyses is included as appendix C. More specific data requirements and the format required for the individual models are described in detail in the users' guide for each model.

9.1 Source Data

9.1.1 Discussion

Sources of pollutants can be classified as point, line and area/volume sources. Point sources are defined in terms of size and may vary between regulatory programs. The line

sources most frequently considered are roadways and streets along which there are well-defined movements of motor vehicles, but they may be lines of roof vents or stacks such as in aluminum refineries. Area and volume sources are often collections of a multitude of minor sources with individually small emissions that are impractical to consider as separate point or line sources. Large area sources are typically treated as a grid network of square areas, with pollutant emissions distributed uniformly within each grid square.

Emission factors are compiled in an EPA publication commonly known as AP-42 (62), an indication of the quality and amount of data on which many of the factors are based is also provided. Other information concerning emissions is available in EPA publications relating to specific source categories. The Regional Office should be consulted to determine appropriate source definitions and for guidance concerning the determination of emissions from and techniques for modeling the various source types.

9.1.2 Recommendations

For point source applications the load or operating condition that causes maximum ground-level concentrations should be established. As a minimum, the source should be modeled using the design capacity (100 percent load). If a source operates at greater than design capacity for periods that could result in violations of the standards or PSD increments, this load¹ should be modeled. Where the source operates at substantially less than design capacity, and the changes in the stack parameters associated with the operating conditions could lead to higher ground level concentrations, loads such as 50 percent and 75 percent of capacity should also be modeled. A range of operating conditions should be considered in screening analyses; the load causing the highest concentration, in addition to the design load, should be included in refined modeling. The following example for a power plant is typical of the kind of data on source characteristics and operating conditions that may be needed. Generally, input data

requirements for air quality models necessitate the use of metric units; where English units are common for engineering usage, a conversion to metric is required.

a. Plant layout. The connection scheme between boilers and stacks, and the distance and direction between stacks, building parameters (length, width, height, location and orientation relative to stacks) for plant structures which house boilers, control equipment, and surrounding buildings within a distance of approximately five stack heights.

b. Stack parameters. For all stacks, the stack height and inside diameter (meters), and the temperature (K) and volume flow rate (actual cubic meters per second) or exit gas velocity (meters per second) for operation at 100 percent, 75 percent and 50 percent load.

c. Boiler size. For all boilers, the associated megawatts, 10^6 BTU/hr, and pounds of steam per hour, and the design and/or actual fuel consumption rate for 100 percent load for coal (tons/hour), oil (barrels/hour), and natural gas (thousand cubic feet/hour).

d. Boiler parameters. For all boilers, the percent excess air used, the boiler type (e.g., wet bottom, cyclone, etc.), and the type of firing (e.g., pulverized coal, front firing, etc.).

e. Operating conditions. For all boilers, the type, amount and pollutant contents of fuel, the total hours of boiler operation and the boiler capacity factor during the year, and the percent load for peak conditions.

f. Pollution control equipment parameters. For each boiler served and each pollutant affected, the type of emission control equipment, the year of its installation, its design efficiency and mass emission rate, the date of the last test and the tested efficiency, the number of hours of operation during the latest year, and the best engineering estimate of its projected efficiency if used in conjunction with coal combustion; data for any anticipated modifications or additions.

g. Data for new boilers or stacks. For all new boilers and stacks under construction and for all planned modifications to existing boilers or stacks, the scheduled date of completion, and the data or best estimates available for items (a) through (f) above

following completion of construction or modification.

In stationary point source applications for compliance with short term ambient standards, SIP control strategies should be tested using the emission input shown on table 9-1. When using a refined model, sources should be modeled sequentially with these loads for every hour of the year. To evaluate SIP's for compliance with quarterly and annual standards, emission input data shown on table 9-1 should again be used. Emissions from area sources should generally be based on annual average conditions. The source input information in each model user's guide should be carefully consulted and the checklist in appendix C should also be consulted for other possible emission data that could be helpful.

Line source modeling of streets and highways requires data on the width of the roadway and the median strip, the types and amounts of pollutant emissions, the number of lanes, the emissions from each lane and the height of emissions. The location of the ends of the straight roadway segments should be specified by appropriate grid coordinates. Detailed information and data requirements for modeling mobile sources of pollution are provided in the user's manuals for each of the models applicable to mobile sources.

The impact of growth on emissions should be considered in all modeling analyses covering existing sources. Increases in emissions due to planned expansion or planned fuel switches should be identified. Increases in emissions at individual sources that may be associated with a general industrial/commercial/residential expansion in multi-source urban areas should also be treated. For new sources the impact of growth on emissions should generally be considered for the period prior to the start-up date for the source. Such changes in emissions should treat increased area source emissions, changes in existing point source emissions which were not subject to preconstruction review, and emissions due to sources with permits to construct that have not yet started operation.

¹ Malfunctions which may result in excess emissions are not considered to be a normal

operating condition. They generally should not be considered in determining allowable emissions.

However, if the excess emissions are the result of poor maintenance, careless operation, or other preventable conditions, it may be necessary to consider them in determining source impact.

TABLE 9-1.—MODEL EMISSION INPUT DATA FOR POINT SOURCES¹

	Emission limit (#/MMBtu) ²	×	Operating level (MMBtu/hr) ³	×	Operating factor (e.g. hr/yr, hr/day)
Stationary Point Source(s) Subject to SIP Emission Limit(s) Evaluation for Compliance with Ambient Standards (Including Areawide Demonstrations)					
Averaging time, Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit..		Actual or design capacity (whichever is greater), or federally enforceable permit condition..		Actual operating factor averaged over most recent 2 years. ⁵
Short term	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition. ⁴		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological data base). ⁶
Nearby Background Source(s) Same input requirements as for stationary point source(s) above.					
Other Background Source(s): If modeled (see section 9.2.3), input data requirements are defined below.					
Averaging time, Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit..		Annual level when actually operating, averaged over the most recent 2 years. ³		Actual operating factor averaged over most recent 2 years. ³
Short term	Maximum allowable emission limit or federally enforceable permit limit..		Annual level when actually operating, averaged over the most recent 2 years. ³		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological data base). ⁶

¹ The model input data requirements shown on this table apply to stationary source control strategies for STATE IMPLEMENTATION PLANS. For purposes of emissions trading, new source review, or prevention of significant deterioration, other model input criteria may apply. Refer to the policy and guidance for these programs to establish the input data.

² Terminology applicable to fuel burning sources; analogous terminology, e.g., #/throughput may be used for other type of sources.

³ Unless it is determined that this period is not representative.

⁴ Operating levels such as 50 percent and 75 percent of capacity should also be modeled to determine the load causing the highest concentration.

⁵ If operation does not occur for all hours of the time period of consideration (e.g., 3 or 24 hours) and the source operation is constrained by a federally enforceable permit condition, an appropriate adjustment to the modeled emission rate may be made (e.g., if operation is only 8 a.m. to 4 p.m. each day, only these hours will be modeled with emissions from the source. Modeled emissions should not be averaged across nonoperating time periods.)

9.2 Background Concentrations

9.2.1 Discussion

Background concentrations are an essential part of the total air quality concentration to be considered in determining source impacts. Background air quality includes pollutant concentrations due to: (1) Natural sources; (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.

Typically, air quality data should be used to establish background concentrations in the vicinity of the source(s) under consideration. The monitoring network used for background determinations should conform to the same quality assurance and other requirements as those networks established for PSD purposes. (63) An appropriate data validation procedure should be applied to the data prior to use.

If the source is not isolated, it may be necessary to use a multi-source model to establish the impact of nearby sources. Background concentrations should be determined for each critical (concentration) averaging time.

9.2.2 Recommendations (Isolated Single Source)

Two options are available to determine background near isolated sources.

Option One: Use air quality data collected in the vicinity of the source to determine the background concentration for the averaging times of concern.¹ Determine the mean background concentration at each monitor by excluding values when the source in question is impacting the monitor. The mean annual background is the average of the annual concentrations so determined at each

monitor. For shorter averaging periods, the meteorological conditions accompanying the concentrations of concern should be identified. Concentrations for meteorological conditions of concern, at monitors not impacted by the source in question, should be averaged for each separate averaging time to determine the average background value. Monitoring sites inside a 90° sector downwind of the source may be used to determine the area of impact. One hour concentrations may be added and averaged to determine longer averaging periods.

Option Two: If there are no monitors located in the vicinity of the source, a "regional site" may be used to determine background. A "regional site" is one that is located away from the area of interest but is impacted by similar natural and distant man-made sources.

9.2.3 Recommendations (Multi-Source Areas)

In multi-source areas two components of background should be determined.

Nearby Sources: All sources expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration for emission limit(s) should be explicitly modeled. For evaluation for compliance with the short term and annual ambient standards, the nearby sources should be modeled using the emission input data shown in Table 9-1. The number of such sources is expected to be small except in unusual situations. The nearby source inventory should be determined in consultation with the local air pollution control agency. It is envisioned that the nearby sources and the sources under consideration will be evaluated together using an appropriate appendix A model.

The impact of the nearby sources should be examined at locations where interactions between the plume of the point source under consideration and those of nearby sources

(plus natural background) can occur.

Significant locations include: (1) The area of maximum impact of the point source; (2) the area of maximum impact of nearby sources; and (3) the area where all sources combine to cause maximum impact. These locations may be identified through trial and error analyses.

Other Sources: That portion of the background attributable to all other sources (e.g., natural sources, minor sources and distant major sources) should be determined either by the procedures found in section 9.2.2 or by application of a model using Table 9-1.

9.3 Meteorological Input Data

The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern. The representativeness of the data is dependent on: (1) The proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected. The spatial representativeness of the data can be adversely affected by large distances between the source and receptors of interest and the complex topographic characteristics of the area. Temporal representativeness is a function of the year-to-year variations in weather conditions.

Model input data are normally obtained either from the National Weather Service or as part of an on-site measurement program. Local universities, FAA, military stations, industry and pollution control agencies may also be sources of such data. Some recommendations for the use of each type of data are included in this section.

¹ For purposes of PSD, the location of monitors as well as data quality assurance procedures must satisfy requirements listed in the PSD Monitoring Guidelines. (63)

9.3.1 Length of Record of Meteorological Data

9.3.1.1 Discussion.

The model user should acquire enough meteorological data to ensure that worst-case meteorological conditions are adequately represented in the model results. The trend toward statistically based standards suggests a need for all meteorological conditions to be adequately represented in the data set selected for model input. The number of years of record needed to obtain a stable distribution of conditions depends on the variable being measured and has been estimated by Landsberg and Jacobs (64) for various parameters. Although that study indicates in excess of 10 years may be required to achieve stability in the frequency distributions of some meteorological variables, such long periods are not reasonable for model input data. This is due in part to the fact that hourly data in model input format are frequently not available for such periods and that hourly calculations of concentration for long periods are prohibitively expensive. A recent study (65) compared various periods from a 17-year data set to determine the minimum number of years of data needed to approximate the concentrations modeled with a 17-year period of meteorological data from one station. This study indicated that the variability of model estimates due to the meteorological data input was adequately reduced if a 5-year period of record of meteorological input was used.

9.3.1.2 Recommendations.

Five years of representative meteorological data should be used when estimating concentrations with an air quality model. Consecutive years from the most recent, readily available 5-year period are preferred. The meteorological data may be data collected either onsite or at the nearest National Weather Service (NWS) station. If the source is large, e.g., a 500 MW power plant, the use of 5 years of NWS meteorological data or at least 1 year of site-specific data is required.

If one year or more, up to five years, of site-specific data is available, these data are preferred for use in air quality analyses. Such data should have been subjected to quality assurance procedures as described in section 9.3.3.2.

For permitted sources whose emission limitations are based on a specific year of meteorological data that year should be added to any longer period being used (e.g., 5 years of NWS data) when modeling the facility at a later time.

9.3.2 National Weather Service Data

9.3.2.1 Discussion.

The National Weather Service (NWS) meteorological data are routinely available and familiar to most model users. Although the NWS does not provide direct measurements of all the needed dispersion model input variables, methods have been developed and successfully used to translate the basic NWS data to the needed model input. Direct measurements of model input parameters have been made for limited model studies and those methods and techniques are becoming more widely

applied; however, most model applications still rely heavily on the NWS data.

There are two standard formats of the NWS data for use in air quality models. The short term models use the standard hourly weather observations available from the National Climatic Data Center (NCDC). These observations are then "preprocessed" before they can be used in the models. "STAR" summaries are available from NCDC for long term model use. These are joint frequency distributions of wind speed, direction and P-G stability category. They are used as direct input to models such as the long term version of ISC. (58)

9.3.2.2 Recommendations.

The preferred short term models listed in appendix A all accept as input the NWS meteorological data preprocessed into model compatible form. Long-term (monthly seasonal or annual) preferred models use NWS "STAR" summaries. Summarized concentration estimates from the short term models may also be used to develop long-term averages; however, concentration estimates based on the two separate input data sets may not necessarily agree.

Although most NWS measurements are made at a standard height of 10 meters, the actual anemometer height should be used as input to the preferred model.

National Weather Service wind directions are reported to the nearest 10 degrees. A specific set of randomly generated numbers has been developed for use with the preferred EPA models and should be used to ensure a lack of bias in wind direction assignments within the models.

Data from universities, FAA, military stations, industry and pollution control agencies may be used if such data are equivalent in accuracy and detail to the NWS data.

9.3.3 Site-Specific Data

9.3.3.1 Discussion.

Spatial or geographical representativeness is best achieved by collection of all of the needed model input data at the actual site of the source(s). Site-specific measured data are therefore preferred as model input, provided appropriate instrumentation and quality assurance procedures are followed and that the data collected are representative (free from undue local or "micro" influences) and compatible with the input requirements of the model to be used. However, direct measurements of all the needed model input parameters may not be possible. This section discusses suggestions for the collection and use of on-site data. Since the methods outlined in this section are still being tested, comparison of the model parameters derived using these site-specific data should be compared at least on a spot-check basis, with parameters derived from more conventional observations.

9.3.3.2 Recommendations.

Site-specific Data Collection

Guidance provided in the "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)" (63) should be used for the establishment of special monitoring networks for PSD and other air quality modeling analyses. That guidance includes requirements and specifications for

both pollutant and meteorological monitoring. Additional information is available in the EPA quality assurance handbooks and site selection guidance documents published on a pollutant-by-pollutant basis (see the Air Programs Report and Guidelines Index EPA-450/2-82-016). Volume IV of the series of reports "Quality Assurance Handbook for Air Pollution Measurement Systems" (66) contains such information for meteorological measurements. As a minimum, site-specific measurements of ambient air temperature, transport wind speed and direction, and the parameters to determine Pasquill-Gifford stability categories should be available in meteorological data sets to be used in modeling. Care should be taken to ensure that monitors are located to represent the area of concern and that they are not influenced by very localized effects. Site-specific data for model applications should cover as long a period of measurement as is possible to ensure adequate representation of "worst-case" meteorology. The Regional Office will determine the appropriateness of the measurement locations.

All site-specific data should be reduced to hourly averages. Table 9-2 lists the wind related parameters and the averaging time requirements.

Temperature Measurements

Temperature measurements should be made at standard shelter height in accordance with the guidance referenced above.

Wind Measurements

In addition to surface wind measurements, the transport wind direction should be measured at an elevation as close as possible to the plume height. To approximate this, if a source has a stack below 100 m, select the stack top height as the transport wind measurement height. For sources with stacks extending above 100 m, a 100 m tower is suggested unless the stack top is significantly above 100 meters (200 m or more). In cases with stacks 200 m or above, the Regional Office should determine the appropriate measurement height on a case-by-case basis. Remote sensing may be a feasible alternative. The dilution wind speed used in determining plume rise and also used in the Gaussian dispersion equation is, by convention, defined as the wind speed at stack top.

For routine tower measurements and surface measurements the wind speed should be measured using an anemometer and the wind direction measured using a horizontal vane. Specifications for wind measuring instruments and monitoring systems are contained in the "Ambient Air Monitoring Guidelines for Prevention of Significant Deterioration (PSD)" (63) and in the quality assurance handbook on meteorological measurements (66). Irwin (67) provides additional guidance for processing wind data.

Stability Categories

The Pasquill-Gifford (P-G) stability categories, as originally defined, couple near-surface measurements of wind speed with subjectively determined insolation assessments based on hourly cloud cover

and ceiling observations. The wind speed measurements are made at or near 10 m. The insolation rate is typically assessed using the cloud cover and ceiling height criteria outlined by Turner (50). Often the cloud cover data are not available in site-specific data sets. In the absence of such observations, it is recommended that the P-G stability category be estimated using Table 9-3. This table requires σ_E , the standard deviation of the vertical wind direction fluctuations. If the surface roughness of the area surrounding the source is different from the 15 cm roughness length upon which the table is based, an adjustment may be made as indicated in the second footnote of Table 9-3. σ_E is computed from direct measurements of the elevation angle of the vertical wind directions.

If measurements of elevation angle are not available, σ_E may be determined using the transform:

$$\sigma_E = \sigma_w/u,$$

where:

σ_E = the standard deviation of the vertical wind direction fluctuations over a one-hour period.

σ_w = the standard deviation of the vertical wind speed fluctuations over a one-hour period.

u = the average horizontal wind speed for a one-hour period.

Since both σ_w and u are in meters per second, G_{68g} is in radians. To use σ_E in Table 9-3, σ_E must be converted to degrees. It is recommended that a vertically mounted propeller anemometer be used to measure the vertical wind speed fluctuations. The instrument should meet the specifications given in the Ambient Monitoring Guidelines referenced above. Compute σ_w directly each hour using at least 360 values based on a recommended readout interval of up to 10 seconds. If σ_E is computed using the output of the anemometer by other than direct application of the formula for a variance, the method should be demonstrated to be equivalent to direct computation. Both the vertical wind speed fluctuations and the horizontal wind speed should be measured at the same level. Moreover, these measurements should be made at a height of 10 m for use in estimating the P-G stability category. Where trees or land use preclude measurements as low as 10 m, measurements should be made at a height above the obstructions.

If on-site measurements of either σ_E or σ_w are not available, stability categories may be determined using the horizontal wind direction fluctuation, σ_A , as outlined by Irwin (68). Irwin includes the Mitchell and Timbre (89) method that uses categories of σ_A (70) listed in Table 9-3, as an initial estimate of the P-G stability category. This relationship is considered adequate for daytime use. During the nighttime (one hour prior to sunset to one hour after sunrise), the adjustments given in Table 9-4 should be applied to these categories. As with σ_E an hourly average σ_A may be adjusted for surface roughness by multiplying the table values of σ_A by a factor based on the average surface roughness length determined within 1 to 3 km of the source. The need for such adjustments should be determined on a case-by-case basis.

Wind direction meander may, at times, lead to an erroneous determination of P-G

stability category based on σ_A . To minimize wind direction meander contributions, σ_A may be determined for each of four 15-minute periods in an hour. However, 360 samples are needed during each 15-minute period. To obtain the σ_A for stability determinations in these situations, take the square root of one-quarter of the sum of the squares of the four 15-minute σ_A 's, as illustrated in the footnote to Table 9-2. While this approach is acceptable for determining stability, σ_A 's calculated in this manner are not likely to be suitable for input to models under development that are designed to accept on-site hourly σ 's based on 60-minute periods.

There has not been a widespread use of σ_E and σ_A to determine P-G categories. As mentioned in the footnotes to Table 9-3, the techniques outlined have not been extensively tested. The criteria listed in Table 9-3, are for σ_E and σ_A values at 10 m. For best results, the σ_E and σ_A values should be for heights near the surface as close to 10 m as practicable. Obstacles and large roughness elements may preclude measurements as low as 10 m. If circumstances preclude measurements below 30 m, the Regional Meteorologist should be consulted to determine the appropriate measurements to be taken on a case-by-case basis. The criteria listed in Tables 9-3 and 9-4 result from studies conducted in relatively flat terrain in rather ideal circumstances. For routine applications where conditions are often less than ideal, it is recommended that a temporary program be initiated at each site to spot-check the stability class estimates. Irwin's method using σ_E or σ_A should be compared with P-G stability class estimates using on-site wind speed and subjective assessments of the insolation based on ceiling height and cloud cover. The Regional Meteorologist should be consulted when using the spot-check results to refine and adjust the preliminary criteria outlined in Tables 9-3 and 9-4.

In summary, when on-site data sets are being used, Pasquill-Gifford stability categories should be determined from one of the following schemes listed in the order of preference:

(1) Turner's 1964 method (54) using site-specific data which include cloud cover, ceiling height and surface (~10 m) wind speeds.

(2) σ_E from site-specific measurements and Table 9-3 (σ_E may be determined from elevation angle measurements or may be estimated from measurements of σ_w according to the transform: $\sigma_E = \sigma_w/u$ (see page 9-17)).

(3) σ_A from site-specific measurements and Tables 9-3 and 9-4.

(4) Turner's 1964 method using site-specific wind speed with cloud cover and ceiling height from a nearby NWS site.

TABLE 9-2.—Averaging Times for Site-Specific Wind and Turbulence Measurements

Parameter	Averaging time
Surface wind speed (for use in stability determinations).	1-hr
Transport direction.....	1-hr
Dilution wind speed.....	1-hr
Turbulence measurements (σ_E and σ_A) for use in stability determinations.	1-hr ¹

¹ To minimize meander effects in σ^2 when wind conditions are light and/or variable, determine the hourly average σ 's from four 15-minute σ 's according to the following formula:

$$\sigma_{1-hr} = \sqrt{\frac{\sigma_{15}^2 + \sigma_{15}^2 + \sigma_{15}^2 + \sigma_{15}^2}{4}}$$

TABLE 9-3.—Wind Fluctuation Criteria For Estimating Pasquill Stability Categories¹

Pasquill stability category	Standard deviation of the horizontal wind direction fluctuations ^{2,3} (σ_A in degrees)	Standard deviation of the vertical wind direction fluctuations ^{2,4} (σ_E in degrees)
A	$\sigma_A \geq 22.5^\circ$	$\sigma_E \geq 11.5^\circ$
B	$17.5^\circ < \sigma_A < 22.5^\circ$	$10.0^\circ \leq \sigma_E < 11.5^\circ$
C	$12.5^\circ < \sigma_A < 17.5^\circ$	$7.8^\circ \leq \sigma_E < 10.0^\circ$
D	$7.5^\circ < \sigma_A < 12.5^\circ$	$5.0^\circ \leq \sigma_E < 7.8^\circ$
E	$3.8^\circ < \sigma_A < 7.5^\circ$	$2.4^\circ \leq \sigma_E < 5.0^\circ$
F	$\sigma_A < 3.8^\circ$	$\sigma_E < 2.4^\circ$

Adapted from: Irwin, J., 1980 (68).

¹ These criteria are appropriate for steady-state conditions, a measurement height of 10 m, for level terrain, and an aerodynamic surface roughness length of 15 cm. Care should be taken that the wind sensor is responsive enough for use in measuring wind direction fluctuations. (63)

² A surface roughness factor of $(z_0/15\text{ cm})^{0.1}$, where z_0 is the average surface roughness in centimeters within a radius of 1-3 km of the source, may be applied to the table values. It should be noted that this factor, while theoretically sound, has not been subjected to rigorous testing and may not improve the estimates in all circumstances. A table of z_0 values that may be used as a guide to estimating surface roughness is given in Smedman-Hogstrom and Hogstrom. (71)

³ These criteria are from a NRC proposal. (70) It would seem reasonable to restrict the possible categories to A through D during daytime hours with a restriction that for 10-m wind speeds above 6 m/s, conditions are neutral. Likewise, during the nighttime hours, some restrictions, as in Table 9-4, are needed to preclude occurrences of categories A through C.

⁴ These criteria were adapted from those presented by Smith and Howard. (72) It would seem reasonable to restrict the possible categories to A through D during the daytime hours and to categories D through F during the nighttime hours. During the daytime, conditions are neutral for 10-m wind speeds equal to or greater than 6 m/s, and during the night, conditions are neutral for 10-m wind speeds equal to or greater than 5 m/s.

TABLE 9-4.—NIGHTTIME¹ P-G STABILITY CATEGORIES BASED ON σA FROM TABLE 9-3

If the σA Stability Category is	And the Wind Speed at 10 m is m/s	Then the Pasquill Stability Category is
A	<2.9.....	F
	2.9 to 3.6.....	E
	≥ 3.6	D
B	<2.4.....	F
	2.4 to 3.0.....	E
C	≥ 3.0	D
	<2.4.....	E
D	≥ 2.4	D
E	wind speed not considered.....	D
	wind speed not considered. ²	E
F	wind speed not considered. ³	F

Adapted from Irwin, J. 1980 (68).

¹ Nighttime is considered to be from 1 hour prior to sunset to 1 hour after sunrise.

² The original Mitchell and Timbre (69) table had no wind speed restrictions; however, the original Pasquill criteria suggest that for wind speeds greater than 5 m/s, neutral conditions should be used.

³ The original Mitchell and Timbre (69) table had no wind speed restrictions; however, the original Pasquill criteria suggest that for wind speeds greater than or equal to 5 m/s, the D category would be appropriate, and for wind speeds between 3 m/s and 5 m/s, the E category should be used.

9.3.4 Treatment of Calms

9.3.4.1 Discussion.

Treatment of calm or light and variable wind poses a special problem in model applications since Gaussian models assume that concentration is inversely proportional to wind speed. Furthermore, concentrations become unrealistically large when wind speeds less than 1 m/s are input to the model. A procedure has been developed for use with NWS data to prevent the occurrence of overly conservative concentration estimates during periods of calms. This procedure acknowledges that a Gaussian plume model does not apply during calm conditions and that our knowledge of plume behavior and wind patterns during these conditions does not, at present, permit the development of a better technique. Therefore, the procedure disregards hours which are identified as calm. The hour is treated as missing and a convention for handling missing hours is recommended.

Preprocessed meteorological data input to most appendix A EPA models substitute a 1.00 m/s wind speed and the previous direction for the calm hour. The new treatment of calms in those models attempts to identify the original calm cases by checking for a 1.00 m/s wind speed coincident with a wind direction equal to the previous hour's wind direction. Such cases are then treated in a prescribed manner when estimating short term concentrations.

9.3.4.2 Recommendations.

Hourly concentrations calculated with Gaussian models using calms should not be considered valid; the wind and concentration estimates for these hours should be disregarded and considered to be missing. Critical concentrations for 3, 8, and 24-hour averages should be calculated by dividing the

sum of the hourly concentration for the period by the number of valid or nonmissing hours. If the total number of valid hours is less than 18 for 24-hour averages, less than 6 for 8-hour averages or less than 3 for 3-hour averages, the total concentration should be divided by 18 for the 24-hour average, 6 for the 8-hour average and 3 for the 3-hour average. For annual averages, the sum of all valid hourly concentrations is divided by the number of non-calm hours during the year. A post-processor computer program, CALMPRO (73) has been prepared following these instructions and has been hardwired in the following models: RAM, ISC, MPTER and CRSTER.

The recommendations above apply to the use of calms for short term averages and do not apply to the determination of long term averages using "STAR" data summaries. Calms should continue to be included in the preparation of "STAR" summaries. A treatment for calms and very light winds is built into the software that produces the "STAR" summaries.

Stagnant conditions, including extended periods of calms, often produce high concentrations over wide areas for relatively long averaging periods. The standard short term Gaussian models are often not applicable to such situations. When stagnation conditions are of concern, other modeling techniques should be considered on a case-by-case basis. (See also Section 8.2.10)

When used in Gaussian models, measured on-site wind speeds of less than 1 m/s but higher than the response threshold of the instrument should be input as 1 m/s; the corresponding wind direction should also be input. Observations below the response threshold of the instrument are also set to 1 m/s but the wind direction from the previous hour is used. If the wind speed or direction can not be determined, that hour should be treated as missing and short term averages should then be calculated as above.

10.0 Accuracy and Uncertainty of Models

10.1 Discussion

Increasing reliance has been placed on concentration estimates from models as the primary basis for regulatory decisions concerning source permits and emission control requirements. In many situations, such as review of a proposed source, no practical alternative exists. Therefore, there is an obvious need to know how accurate models really are and how any uncertainty in the estimates affects regulatory decisions. EPA recognizes the need for incorporating such information and has sponsored workshops (11, 74) on model accuracy, the possible ways to quantify accuracy, and on considerations in the incorporation of model accuracy and uncertainty in the regulatory process. The Second (EPA) Conference on Air Quality Modeling, August 1982, (75) was devoted to that subject.

10.1.1 Overview of Model Uncertainty

Dispersion models generally attempt to estimate concentrations at specific sites that really represent an ensemble average of numerous repetitions of the same event. The event is characterized by measured or "known" conditions that are input to the

models, e.g., wind speed, mixed layer height, surface heat flux, emission characteristics, etc. However, in addition to the known conditions, there are unmeasured or unknown variations in the conditions of this event, e.g., unresolved details of the atmospheric flow such as the turbulent velocity field. These unknown conditions, may vary among repetitions of the event. As a result, deviations in observed concentrations from their ensemble average, and from the concentrations estimated by the model, are likely to occur even though the known conditions are fixed. Even with a *perfect model* that predicts the correct ensemble average, there are likely to be deviations from the observed concentrations in individual repetitions of the event, due to variations in the unknown conditions. The statistics of these concentration residuals are termed "inherent" uncertainty. Available evidence suggests that this source of uncertainty alone may be responsible for a typical range of variation in concentrations of as much as ± 50 percent. (76)

Moreover, there is "reducible" uncertainty (77) associated with the model and its input conditions; neither models nor data bases are perfect. Reducible uncertainties are caused by: (1) Uncertainties in the input values of the known condition—emission characteristics and meteorological data; (2) errors in the measured concentrations which are used to compute the concentration residuals; and (3) inadequate model physics and formulation. The "reducible" uncertainties can be minimized through better (more accurate and more representative) measurements and better model physics.

To use the terminology correctly, reference to model accuracy should be limited to that portion of reducible uncertainty which deals with the physics and the formulation of the model. The accuracy of the model is normally determined by an evaluation procedure which involves the comparison of model concentration estimates with measured air quality data. (78) The statement of accuracy is based on statistical tests or performance measures such as bias, noise, correlation, etc. (11) However, information that allows a distinction between contributions of the various elements of inherent and reducible uncertainty is only now beginning to emerge. As a result most discussions of the accuracy of models make no quantitative distinction between (1) limitations of the model versus (2) limitations of the data base and of knowledge concerning atmospheric variability. The reader should be aware that statements on model accuracy and uncertainty may imply the need for improvements in model performance that even the "perfect" model could not satisfy.

10.1.2 Studies of Model Accuracy

A number of studies (79, 80) have been conducted to examine model accuracy, particularly with respect to the reliability of short-term concentrations required for ambient standard and increment evaluations. The results of these studies are not surprising. Basically, they confirm what leading atmospheric scientists have said for some time: (1) Models are more reliable for estimating longer time-averaged

concentrations than for estimating short-term concentrations at specific locations; and (2) the models are reasonably reliable in estimating the magnitude of highest concentrations occurring sometime, somewhere within an area. For example, errors in highest estimated concentrations of ± 10 to 40 percent are found to be typical, (81) i.e., certainly well within the often-quoted factor-of-two accuracy that has long been recognized for these models. However, estimates of concentrations that occur at a specific time and site, are poorly correlated with actually observed concentrations and are much less reliable.

As noted above, poor correlations between paired concentrations at fixed stations may be due to "reducible" uncertainties in knowledge of the precise plume location and to unquantified inherent uncertainties. For example, Pasquill (82) estimates that, apart from data input errors, maximum ground-level concentrations at a given hour for a point source in flat terrain could be in error by 50 percent due to these uncertainties. Uncertainty of five to 10 degrees in the measured wind direction, which transports the plume, can result in concentration errors of 20 to 70 percent for a particular time and location, depending on stability and station location. Such uncertainties do not indicate that an estimated concentration does not occur, only that the precise time and locations are in doubt.

10.1.3 Use of Uncertainty in Decision-Making

The accuracy of model estimates varies with the model used, the type of application, and site-specific characteristics. Thus, it is desirable to quantify the accuracy or uncertainty associated with concentration estimates used in decision-making. Communications between modelers and decision-makers must be fostered and further developed. Communications concerning concentration estimates currently exist in most cases, but the communications dealing with the accuracy of models and its meaning to the decision-maker are limited by the lack of a technical basis for quantifying and directly including uncertainty in decisions. Procedures for quantifying and interpreting uncertainty in the practical application of such concepts are only beginning to evolve; much study is still required. (74, 75, 77)

In all applications of models an effort is encouraged to identify the reliability of the model estimates for that particular area and to determine the magnitude and sources of error associated with the use of the model. The analyst is responsible for recognizing and quantifying limitations in the accuracy, precision and sensitivity of the procedure. Information that might be useful to the decision-maker in recognizing the seriousness of potential air quality violations includes such model accuracy estimates as accuracy of peak predictions, bias, noise, correlation, frequency distribution, spatial extent of high concentration, etc. Both space/time pairing of estimates and measurements and unpaired comparisons are recommended. Emphasis should be on the highest concentrations and the averaging times of the standards or increments of concern. Where possible, confidence intervals about the statistical values should be provided. However, while

such information can be provided by the modeler to the decision-maker, it is unclear how this information should be used to make an air pollution control decision. Given a range of possible outcomes, it is easiest and tends to ensure consistency if the decision-maker confines his judgment to use of the "best estimate" provided by the modeler (i.e., the design concentration estimated by a model recommended in this guideline or an alternate model of known accuracy). This is an indication of the practical limitations imposed by current abilities of the technical community.

To improve the basis for decision-making, EPA has developed and is continuing to study procedures for determining the accuracy of models, quantifying the uncertainty, and expressing confidence levels in decisions that are made concerning emissions controls. (83, 84) However, work in this area involves "breaking new ground" with slow and sporadic progress likely. As a result, it may be necessary to continue using the "best estimate" until sufficient technical progress has been made to meaningfully implement such concepts dealing with uncertainty.

10.1.4 Evaluation of Models

A number of actions are being taken to ensure that the best model is used correctly for each regulatory application and that a model is not arbitrarily imposed. First, this guideline clearly recommends that the most appropriate model be used in each case. Preferred models, based on a number of factors, are identified for many uses. General guidance on using alternatives to the preferred models is also provided. Second, all the models in eight categories (i.e., rural, urban, industrial complex, reactive pollutants, mobile source, complex terrain, visibility and long-range transport) that are candidates for inclusion in this guideline are being subjected to a systematic performance evaluation and a peer scientific review. (85) The same data bases are being used to evaluate all models within each of eight categories. Statistical performance measures, including measures of difference (or residuals) such as bias, variance of difference and gross variability of the difference, and measures of correlation such as time, space, and time and space combined as recommended by the AMS Woods Hole Workshop (11) are being followed. The results of the scientific review are being incorporated in this guideline and will be the basis for future revision. (12, 13) Third, more specific information has been provided for justifying the site-specific use of alternative models in the document "Interim Procedures for Evaluating Air Quality Models." (15) This document provides a method, following recommendations of the Woods Hole Workshop, that allows a judgment to be made as to what models are most appropriate for a specific application. For the present, performance and the theoretical evaluation of models are being used as an indirect means to quantify one element of uncertainty in air pollution regulatory decisions.

In addition to performance evaluation of models, sensitivity analyses are encouraged since they can provide additional information on the effect of inaccuracies in the data bases and on the uncertainty in model estimates.

Sensitivity analyses can aid in determining the effect of inaccuracies of variations or uncertainties in the data bases on the range of likely concentrations. Such information may be used to determine source impact and to evaluate control strategies. Where possible, information from such sensitivity analyses should be made available to the decisionmaker with an appropriate interpretation of the effect on the critical concentrations.

10.2 Recommendations

No specific guidance on the consideration of model uncertainty in decisionmaking is being given at this time. There is incomplete technical information on measures of model uncertainty that are most relevant to the decisionmaker. It is not clear how a decisionmaker could use such information, particularly given limitations of the Clean Air Act. As procedures for considering uncertainty develop and become implementable, this guidance will be changed and expanded. For the present, continued use of the "best estimate" is acceptable and is consistent with CAA requirements.

11.0 Regulatory Application of Models

11.1 Discussion

Procedures with respect to the review and analysis of air quality modeling and data analyses in support of SIP revisions, PSD permitting or other regulatory requirements need a certain amount of standardization to ensure consistency in the depth and comprehensiveness of both the review and the analysis itself. This section recommends procedures that permit some degree of standardization while at the same time allowing the flexibility needed to assure the technically best analysis for each regulatory application.

Dispersion model estimates, especially with the support of measured air quality data, are the preferred basis for air quality demonstrations. Nevertheless, there are instances where the performance of recommended dispersion modeling techniques, by comparison with observed air quality data, may be shown to be less than acceptable. Also, there may be no recommended modeling procedure suitable for the situation. In these instances, emission limitations may be established solely on the basis of observed air quality data. The same care should be given to the analysis of the air quality data as would be applied to a modeling analysis.

The current NAAQS for SO₂, TSP, and CO are all stated in terms of a concentration not to be exceeded more than once a year. There is only an annual standard for NO₂. The ozone standard was revised in 1979 and that standard permits the exceedance of a concentration on an average of not more than once a year, averaged over a 3-year period. (5, 86) This represents a change from a deterministic to a more statistical form of the standard and permits some consideration to be given to unusual circumstances. The NAAQS are subjected to extensive review and possible revision every 5 years.

This section discusses general requirements for concentration estimates and

identifies the relationship to emission limits. The following recommendations apply to: (1) Revisions of State Implementation Plans; (2) the review of new sources and the prevention of significant deterioration (PSD); and (3) analyses of the emissions trades ("bubbles").

11.2 Recommendations

11.2.1 Analysis Requirements.

Every effort should be made by the Regional Office to meet with all parties involved in either a SIP revision or a PSD permit application prior to the start of any work on such a project. During this meeting, a protocol should be established between the preparing and reviewing parties to define the procedures to be followed, the data to be collected, the model to be used, and the analysis of the source and concentration data. An example of requirements for such an effort is contained in the Air Quality Analysis Checklist included here as appendix C. This checklist suggests the level of detail required to assess the air quality resulting from the proposed action. Special cases may require additional data collection or analysis and this should be determined and agreed upon at this preapplication meeting. The protocol should be written and agreed upon by the parties concerned, although a formal legal document is not intended. Changes in such a protocol are often required as the data collection and analysis progresses. However, the protocol establishes a common understanding of the requirements.

An air quality analysis should begin with a screening model to determine the potential of the proposed source or control strategy to violate the PSD increment or the NAAQS. It is recommended that the screening techniques found in "Procedures for Evaluating Air Quality Impact of New Stationary Sources" (18) be used for point source analyses. Screening procedures for area source analysis are discussed in "Applying Atmospheric Simulation Models to Air Quality Maintenance Areas." (87)

If the concentration estimates from screening techniques indicate that the PSD increment or NAAQS may be approached or exceeded, then a more refined modeling analysis is appropriate and the model user should select a model according to recommendations in sections 4, 5, 6 or 7. In some instances, no refined technique may be specified in this guide for the situation. The model user is then encouraged to submit a model developed specifically for the case at hand. If that is not possible, a screening technique may supply the needed results.

Regional Offices should require permit applicants to incorporate the pollutant contributions of all sources into their analysis. Where necessary this may include emissions associated with growth in the area of impact of the new or modified source's impact. PSD air quality assessments should consider the amount of the allowable air quality increment that has already been granted to any other sources. The most recent source applicant should be allowed the prerogative to remodel the existing or permitted sources in addition to the one currently under consideration. This would permit the use of newly acquired data or improved modeling techniques if such have become available since the last source was

permitted. When remodeling, the worst case used in the previous modeling analysis should be one set of conditions modeled in the new analysis. All sources should be modeled for each set of meteorological conditions selected and for all receptor sites used in the previous applications as well as new sites specific to the new source.

11.2.2 Use of Measured Data in Lieu of Model Estimates.

Modeling is the preferred method for determining emission limitations for both new and existing sources. When a preferred model is available, model results alone (including background) are sufficient. Monitoring will normally not be accepted as the sole basis for emission limitation determination in flat terrain areas. In some instances when the modeling technique available is only a screening technique, the addition of air quality data to the analysis may lend credence to model results.

There are circumstances where there is no applicable model, and measured data may need to be used. Examples of such situations are: (1) Complex terrain locations; (2) land/water interface areas; and (3) urban locations with a large fraction of particulate emissions from nontraditional sources. However, only in the case of an existing source should monitoring data alone be a basis for emission limits. In addition, the following items should be considered prior to the acceptance of the measured data:

- a. Does a monitoring network exist for the pollutants and averaging times of concern;
- b. Has the monitoring network been designed to locate points of maximum concentration;
- c. Do the monitoring network and the data reduction and storage procedures meet EPA monitoring and quality assurance requirements;
- d. Do the data set and the analysis allow impact of the most important individual sources to be identified if more than one source or emission point is involved;
- e. Is at least one full year of valid ambient data available; and
- f. Can it be demonstrated through the comparison of monitored data with model results that available models are not applicable?

The number of monitors required is a function of the problem being considered. The source configuration, terrain configuration, and meteorological variations all have an impact on number and placement of monitors. Decisions can only be made on a case-by-case basis. The Interim Procedure for Evaluating Air Quality Models (15) should be used in establishing criteria for demonstrating that a model is not applicable.

Sources should obtain approval from the Regional Office or reviewing authority for the monitoring network prior to the start of monitoring. A monitoring protocol agreed to by all concerned parties is highly desirable. The design of the network, the number, type and location of the monitors, the sampling period, averaging time as well as the need for meteorological monitoring or the use of mobile sampling or plume tracking techniques, should all be specified in the protocol and agreed upon prior to start-up of the network.

11.2.3 Emission Limits

11.2.3.1 Design Concentrations.

Emission limits should be based on concentration estimates for the averaging time that results in the most stringent control requirements. The concentration used in specifying emission limits is called the design value or design concentration and is a sum of the concentration contributed by the source and the background concentration.

To determine the averaging time for the design value, the most restrictive National Ambient Air Quality Standard (NAAQS) should be identified by calculating, for each averaging time, the ratio of the applicable NAAQS(S) minus background (B) to the predicted concentration (P) (i.e., $(S-B)/P$). The averaging time with the lowest ratio identifies the most restrictive standard. If the annual average is the most restrictive, the highest estimated annual average concentration from one or a number of years of data is the design value. When short term standards are most restrictive, it may be necessary to consider a broader range of concentrations than the highest value. For example, for pollutants such as SO₂, the highest, second-highest concentration is the design value. For pollutants with statistically based NAAQS, the design value is found by determining the value that is not expected to be exceeded more than once per year over the period specified in the standard.

When the highest, second-highest concentration is used in assessing potential violations of a short term NAAQS, criteria that are identified in "Guideline for Interpretation of Air Quality Standards" (88) should be followed. This guideline specifies that a violation of a short term standard occurs at a site when the standard is exceeded a second time. Thus, emission limits that protect standards for averaging times of 24 hours or less are appropriately based on the highest, second-highest estimated concentration plus a background concentration which can reasonably be assumed to occur with the concentration.

11.2.3.2 Air Quality Standards.

For new or modified sources to be located in areas where the SO₂, TSP, lead, NO₂, or CO NAAQS are being attained, the determination of whether or not the source will cause or contribute to an air quality violation should be based on (1) the highest estimated annual average concentration determined from annual averages of individual years or (2) the highest, second-highest estimated concentration for averaging times of 24-hours or less. For lead, the highest estimated concentration based on an individual calendar quarter averaging period should be used. Background concentrations should be added to the estimated impact of the source. The most restrictive standard should be used in all cases to assess the threat of an air quality violation.

11.2.3.3 PSD Air Quality Increments and Impacts.

The allowable PSD increments for criteria pollutants are established by regulation and cited in 40 CFR 51.24. These maximum allowable increases in pollutant concentrations may be exceeded once per year at each site, except for the annual

increment that may not be exceeded. The highest, second-highest increase in estimated concentrations for the short term averages as determined by a model should be less than or equal to the permitted increment. The modeled annual averages should not exceed the increment.

Screening techniques defined in sections 4 and 5 can sometimes be used to estimate short term incremental concentrations for the first new source that triggers the baseline in a given area. However, when multiple increment-consuming sources are involved in the calculation, the use of a refined model with at least one year of on-site or five years of off-site NWS data is normally required. In such cases, sequential modeling must demonstrate that the allowable increments are not exceeded temporally and spatially, i.e., for all receptors for each time period throughout the year(s) (time period means the appropriate PSD averaging time, e.g., 3-hour, 24-hour, etc.).

The PSD regulations require an estimation of the SO₂ and TSP impact on any Class I area. Normally, Gaussian models should not be applied at distances greater than can be accommodated by the steady state assumptions inherent in such models. The maximum distance for refined Gaussian model application for regulatory purposes is generally considered to be 50 km. Beyond the 50 km range, screening techniques may be used to determine if more refined modeling is needed. If refined models are needed, long range transport models should be considered in accordance with section 7.2.6. As previously noted in sections 3 and 7, the need to involve the Federal Land Manager in decisions on potential air quality impacts, particularly in relation to PSD Class I areas, cannot be overemphasized.

11.2.3.4 Emissions Trading Policy (Bubbles).

EPA's Emissions Trading Policy, commonly referred to as the "bubble policy," was proposed in the *Federal Register* on April 7, 1982. (89) Until a final policy is promulgated, principles contained in the proposal should be used to evaluate trading activities which become ripe for decision. Certain technical clarifications of the policy, including procedures for modeling bubbles, were provided to the Regional Offices in February, 1983. (90)

Emission increases and decreases within the bubble should result in ambient air quality equivalence. Two levels of analysis are defined for establishing this equivalence. In a Level I analysis the source configuration and setting must meet certain limitations (defined in the policy and clarification to the policy) that ensure ambient equivalence; no modeling is required. In a Level II analysis a modeling demonstration of ambient equivalence is required but only the sources involved in the emissions trade are modeled. The resulting ambient estimates of net increases/decreases are compared to a set of significance levels to determine if the bubble can be approved. A Level II analysis requires the use of a refined model and one year of representative meteorological data. Sequential modeling must demonstrate that the significance levels are met temporally and spatially, i.e., for all receptors for each

time period throughout the year (time period means the appropriate NAAQS averaging time, e.g., 3-hour, 24-hour, etc.)

For those bubbles that cannot meet the Level I or Level II requirements, the Emissions Trading Policy allows for a Level III analysis. A Level III analysis, from a modeling standpoint, is equivalent to the requirements for a standard SIP revision where all sources (and background) are considered and the estimates are compared to the NAAQS as in section 11.2.3.2.

The Emissions Trading Policy allows States to adopt generic regulations for processing bubbles. The modeling procedures recommended in this guideline apply to such generic regulations. However, an added requirement is that the modeling procedures contained in any generic regulation must be replicable such that there is no doubt as to how each individual bubble will be modeled. In general this means that the models, the data bases and the procedures for applying the model must be defined in the regulation. The consequences of the replicability requirement are that bubbles for sources located in complex terrain and certain industrial sources where judgments must be made on source characterization cannot be handled generically.

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14.0 Glossary of Terms

Air Quality—Ambient pollutant concentrations and their temporal and spatial distribution.

Algorithm—A specific mathematical calculation procedure. A model may contain several algorithms.

Background—Ambient pollutant concentrations due to (1) natural sources, (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.

Calibrate—An objective adjustment using measured air quality data (e.g., an adjustment based on least-squares linear regression).

Calm—For purposes of air quality modeling, calm is used to define the situation when the wind is indeterminate with regard to speed or direction.

Complex Terrain—Terrain exceeding the height of the stack being modeled.

¹ The documents listed here are major sources of supplemental information on the theory and application of mathematical air quality models.

Computer Code—A set of statements that comprise a computer program.

Evaluate—To appraise the performance and accuracy of a model based on a comparison of concentration estimates with observed air quality data.

Fluid Modeling—Modeling conducted in a wind tunnel or water channel to quantitatively evaluate the influence of buildings and/or terrain on pollutant concentrations.

Fugitive Dust—Dust discharged to the atmosphere in an unconfined flow stream such as that from unpaved roads, storage piles and heavy construction operations.

Model—A quantitative or mathematical representation or simulation which attempts to describe the characteristics or relationships of physical events.

Preferred Model—A refined model that is recommended for a specific type of regulatory application.

Receptor—A location at which ambient air quality is measured or estimated.

Receptor Models—Procedures that examine an ambient monitor sample of particulate matter and the conditions of its collection to infer the types or relative mix of sources impacting on it during collection.

Refined Model—An analytical technique that provides a detailed treatment of physical and chemical atmospheric processes and requires detailed and precise input data. Specialized estimates are calculated that are useful for evaluating source impact relative to air quality standards and allowable increments. The estimates are more accurate than those obtained from conservative screening techniques.

Rollback—A simple model that assumes that if emissions from each source affecting a given receptor are decreased by the same percentage, ambient air quality concentrations decrease proportionately.

Screening Technique—A relatively simple analysis technique to determine if a given source is likely to pose a threat to air quality. Concentration estimates from screening techniques are conservative.

Simple Terrain—An area where terrain features are all lower in elevation than the top of the stack of the source.

Appendix A to Appendix X of Part 266—Summaries of Preferred Air Quality Models

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- A.0 Introduction
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- A.2 Caline 3
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- A.4 Gaussian-Plume multiple source air quality algorithm (RAM)
- A.5 Industrial source complex model (ISC)
- A.6 Multiple point Gaussian dispersion algorithm with terrain adjustment (MPTER)
- A.7 Single source (CRSTER) model
- A.8 Urban airshed model (UAM)
- A.9 Offshore and coastal dispersion model (OCD)
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A.0 Introduction

This appendix summarizes key features of refined air quality models preferred for specific regulatory applications. For each model, information is provided on availability, approximate cost in 1986¹, regulatory use, data input, output format and options, simulation of atmospheric physics, and accuracy. These models may be used without a formal demonstration of applicability provided they satisfy the recommendations for regulatory use; not all options in the models are necessarily recommended for regulatory use. The models are listed by name in alphabetical order.

Each of these models has been subjected to a performance evaluation using comparisons with observed air quality data. A summary of such comparisons for all models contained in this appendix is included in "A Survey of Statistical Measures of Model Performance and Accuracy for Several Air Quality Models," EPA-450/4-83-001. Where possible, several of the models contained herein have been subjected to evaluation exercises, including (1) statistical performance tests recommended by the American Meteorological Society and (2) peer scientific reviews. The models in this appendix have been selected on the basis of the results of the model evaluations, experience with previous use, familiarity of the model to various air quality programs, and the costs and resource requirements for use.

A.1 Buoyant Line and Point Source Dispersion Model (BLP)

Reference

Schulman, Lloyd L., and Joseph S. Scire, 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide. Document P-7304B. Environmental Research and Technology, Inc., Concord, MA. (NTIS PB 81-164642)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

BLP is a Gaussian plume dispersion model designed to handle unique modeling problems associated with aluminum reduction plants, and other industrial sources where plume rise and downwash effects from stationary line sources are important.

a. Recommendations for Regulatory Use

The BLP model is appropriate for the following applications:

Aluminum reduction plants which contain buoyant, elevated line sources;
Rural areas;
Transport distances less than 50 kilometers;
Simple terrain; and

¹ All models except the Urban Airshed Model are available on UNAMAP (Version 6) from NTIS at a price consistent with the previous version of UNAMAP.

One hour to one year averaging times.

The following options should be selected for regulatory applications:

Rural (IRU=1) mixing height option;

Default (no selection) for plume rise wind shear (LSHEAR), transitional point source plume rise (LTRANS), vertical potential temperature gradient (DTHTA), vertical wind speed power law profile exponents (PEXP), maximum variation in number of stability classes per hour (IDELS), pollutant decay (DECFAC), the constant in Briggs' stable plume rise equation (CONST2), constant in Briggs' neutral plume rise equation (CONST3), convergence criterion for the line source calculations (CRIT), and maximum iterations allowed for line source calculations (MAXIT); and

Terrain option (TERAN) set equal to 0., 0., 0., 0., 0.

For other applications, BLP can be used if it can be demonstrated to give the same estimates as a recommended model for the same application, and will subsequently be executed in that mode.

BLP can be used on a case-by-case basis with specific options not available in a recommended model if it can be demonstrated, using the criteria in section 3.2, that the model is more appropriate for a specific application.

b. Input Requirements

Source data: Point sources require stack location, elevation of stack base, physical stack height, stack inside diameter, stack gas exit velocity, stack gas exit temperature, and pollutant emission rate. Line sources require coordinates of the end points of the line, release height, emission rate, average line source width, average building width, average spacing between buildings, and average line source buoyancy parameter.

Meteorological data: Hourly surface weather data from punched cards or from the preprocessor program RAMMET which provides hourly stability class, wind direction, wind speed, temperature, and mixing height.

Receptor data: Locations and elevations of receptors, or location and size of receptor grid or request automatically generated receptor grid.

c. Output

Printed output (from a separate post-processor program) includes:

Total concentration or, optionally, source contribution analysis; monthly and annual frequency distributions for 1-, 3-, and 24-hour average concentrations; tables of 1-, 3-, and 24-hour average concentrations at each receptor; table of the annual (or length of run) average concentrations at each receptor.

Five highest 1-, 3-, and 24-hour average concentrations at each receptor; and

Fifty highest 1-, 3-, and 24-hour concentrations over the receptor field.

d. Type of Model

BLP is a Gaussian plume model.

e. Pollutant Types

BLP may be used to model primary pollutants. This model does not treat settling and deposition.

f. Source-Receptor Relationship

BLP treats up to 50 point sources, 10 parallel line sources, and 100 receptors arbitrarily located.

User-input typographic elevation is applied for each stack and each receptor.

g. Plume Behavior

BLP uses plume rise formulas of Schulman and Scire (1980).

Vertical potential temperature gradients of .02 Kelvin per meter for E stability and .035 Kelvin per meter are used for stable plume rise calculations. An option for user input values is included.

Transitional rise is used for line sources.

Option to suppress the use of transitional plume rise for point sources is included.

The building downwash algorithm of Schulman and Scire (1980) is used.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Wind speeds profile exponents of .10, .15, .20, .25, .30, and .30 are used for stability classes A through F, respectively. An option for user-defined values and an option to suppress the use of the wind speed profile feature are included.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients are from Turner (1969), with no adjustment made for variations in surface roughness or averaging time.

Six stability classes are used.

k. Vertical Dispersion

Rural dispersion coefficients are from Turner (1969), with no adjustment made for variations in surface roughness.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 16 times the mixing height; uniform mixing is assumed beyond that point.

Perfect reflection at the ground is assumed.

1. Chemical Transformation

Chemical transformations are treated using linear decay. Decay rate is input by the user.

m. Physical Removal

Physical removal is not explicitly treated.

n. Evaluation Studies

Schulman, L. L., and J. S. Scire, 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide, P-7304B.

Environmental Research and Technology, Inc., Concord, MA.

Scire, J. S., and L. L. Schulman, 1981.

Evaluation of the BLP and ISC Models with SF₆ Tracer Data and SO₂ Measurements at Aluminum Reduction Plants. APCA Specialty Conference on Dispersion Modeling for Complex Sources, St. Louis, MO.

A.2 Caline3**Reference**

Benson, Paul E. 1979. CALINE3—A Versatile Dispersion Model for Predicting Air Pollutant Levels Near Highways and Arterial Streets. Interim Report, Report Number FHWA/CA/TL-79/23. Federal Highway Administration, Washington, DC (NTIS PB80-220841).

Availability

The CALINE3 model computer tape is available from NTIS as PB80-220833. The model is also available from the California Department of Transportation (manual free of charge and approximately \$50 for the computer tape). Requests should be directed to: Mr. Marlin Beckwith, Chief, Office of Computer Systems, California Department of Transportation, 1120 N. Street, Sacramento, California 95814.

Abstract

CALINE3 can be used to estimate the concentrations of nonreactive pollutants from highway traffic. This steady-state Gaussian model can be applied to determine air pollution concentrations at receptor locations downwind of "at-grade," "fill," "bridge," and "cut section" highways located in relatively uncomplicated terrain. The model is applicable for any wind direction, highway orientation, and receptor location. The model has adjustments for averaging time and surface roughness, and can handle up to 20 links and 20 receptors. It also contains an algorithm for deposition and settling velocity so that particulate concentrations can be predicted.

a. Recommendations for Regulatory Use

CALINE-3 is appropriate for the following applications:

Highway (line) sources;
Urban or rural areas;
Simple terrain;
Transport distances less than 50 kilometers; and
One hour to 24 hours averaging times.

b. Input Requirements

Source data: Up to 20 highway links classed as "at-grade," "fill" "bridge," or "depressed"; coordinates of link end points; traffic volume; emission factor; source height; and mixing zone width.

Meteorological data: Wind speed, wind angle (measured in degrees clockwise from the Y axis), stability class, mixing height, ambient (background to the highway) concentration of pollutant.

Receptor data: coordinates and height above ground for each receptor.

c. Output

Printed output includes:
Concentration at each receptor for the specified meteorological condition.

d. Type of Model

CALINE-3 is a Gaussian plume model.

e. Pollutant Types

CALINE-3 may be used to model primary pollutants.

f. Source-Receptor Relationship

Up to 20 highway links are treated.

CALINE-3 applies user input location and emission rate for each link.

User-input receptor locations are applied.

g. Plume Behavior

Plume rise is not treated.

h. Horizontal Winds

User-input hourly wind speed and direction are applied.

Constant, uniform (steady-state) wind is assumed for an hour.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Six stability classes are used.

Rural dispersion coefficients from Turner (1969) are used, with adjustment for roughness length and averaging time.

Initial traffic-induced dispersion is handled implicitly by plume size parameters.

k. Vertical Dispersion

Six stability classes are used.

Empirical dispersion coefficients from Benson (1979) are used including an adjustment for roughness length.

Initial traffic-induced dispersion is handled implicitly by plume size parameters.

Adjustment for averaging time is included.

1. Chemical Transformation

Not treated.

m. Physical Removal

Optional deposition calculations are included.

n. Evaluation Studies

Bemis, G. R., et al, 1977. Air Pollution and Roadway Location, Design, and Operation—Project Overview. FHWA-CA-TL-7080-77-25, Federal Highway Administration, Washington, DC.

Cadle, S. H., et al, 1978. Results of the General Motors Sulfate Dispersion Experiment, GM-2107. General Motors Research Laboratories, Warren, MI.

Dabberdt, W. F., 1975. Studies of Air Quality on and Near Highways, Project 2761. Stanford Research Institute, Menlo Park, CA.

A.3 Climatological Operation Model (CDM 2.0)**References**

Irwin, J. S., T. Chico, and J. Catalano 1985. CDM 2.0—Climatological Dispersion Model—User's Guide. U. S. Environmental Protection Agency, Research Triangle Park, N.C. (NTIS PB88-136546)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

CDM is a climatological steady-state Gaussian plume model for determining long-term (seasonal or annual) arithmetic average pollutant concentrations at any ground-level receptor in an urban area.

a. Recommendations for Regulatory Use

CDM is appropriate for the following applications:

Point and area sources;

Urban areas;

Flat terrain;

Transport distances less than 50 kilometers;

Long term averages over one month to one year or longer.

The following option should be selected for regulatory applications:

Set the regulatory "default option" (NDEF=1) which automatically selects stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), and the appropriate wind profile exponents.

Enter "0" for pollutant half-life for all pollutants except for SO₂ in an urban setting. This entry results in no decay (infinite half-life) being calculated. For SO₂ in an urban setting, the pollutant half-life (in hours) should be set to 4.0.

b. Input Requirements

Source data: Location, average emissions rates and heights of emissions for point and area sources. Point source data requirements also include stack gas temperature, stack gas exit velocity, and stack inside diameter for plume rise calculations for point sources.

Meteorological data: Stability wind rose (STAR deck day/night version), average mixing height and wind speed in each stability category, and average air temperature.

Receptor data: cartesian coordinates of each receptor.

c. Output

Printed output includes:

Average concentrations for the period of the stability wind rose data (arithmetic mean only) at each receptor, and

Optional point and area concentration rose for each receptor.

d. Type of Model

CDM is a climatological Gaussian plume model.

e. Pollutant Types

CDM may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

CDM applies user-specified locations for all point sources and receptors.

Area sources are input as multiples of a user-defined unit area source grid size.

User specified release heights are applied for individual point sources and the area source grid.

Actual separation between each source-receptor pair is used.

The user may select a single height at or above ground level that applies to all receptors.

No terrain differences between source and receptor are treated.

g. Plume Behavior

CDM uses Briggs (1969, 1971, 1975) plume rise equations. Optionally a plume rise-wind speed product may be input for each point source.

Stack tip downwash equation from Briggs (1974) is preferred for regulatory use. The Bjorklund and Bowers (1982) equation is also included.

No plume rise is calculated for area sources.

Does not treat fumigation or building downwash.

h. Horizontal Winds

Wind data are input as a stability wind rose (joint frequency distribution of 16 wind directions, 6 wind classes, and 5 stability classes).

Wind speed profile exponents for the urban case (EPA, 1989) are used, assuming the anemometer height is at 10.0 meters.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Pollutants are assumed evenly distributed across a 22.5 or 10.0 degree sector.

k. Vertical Dispersion

There are seven vertical dispersion parameter schemes, but the following is recommended for regulatory applications: Briggs-urban (Gifford, 1976).

Mixing height has no effect until dispersion coefficient equals 0.8 times the mixing height; uniform vertical mixing is assumed beyond that point.

Buoyancy-induced dispersion (Pasquill, 1976) is included as an option.

Perfect reflection is assumed at the ground.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is not explicitly treated.

n. Evaluation Studies

Irwin, J. S., and T. M. Brown, 1985. A Sensitivity Analysis of the Treatment of Area Sources by the Climatological Dispersion Model, Journal of Air Pollution Control Association, 35:359-364.

Lonergan, R., D. Minott, D. Wachter and R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models, EPA Publication No. EPA 450/4-83-020, U.S. Environmental Protection Agency, Research Triangle Park, NC.

Busse, A. D. and J. R. Zimmerman, 1973. User's Guide for the Climatological Dispersion Model—Appendix E. EPA Publication No. EPA R4-73-024. Office of Research and Development Research Triangle Park, NC.

Zimmerman, J. R., 1971. Some Preliminary Results of Modeling from the Air Pollution Study of Ankara, Turkey. Proceedings of the Second Meeting of the Expert Panel on Air Pollution Modeling, NATO Committee on the Challenges of Modern Society, Paris, France.

Zimmerman, J. R., 1972. The NATO/CCMS Air Pollution Study of St. Louis, Missouri. Presented at the Third Meeting of the Expert Panel on Air Pollution Modeling, NATO Committee on the Challenges of Modern Society, Paris, France.

A.4 Gaussian-Plume Multiple Source Air Quality Algorithm (RAM)**References:**

Turner, D. B., and J. H. Novak, 1978. User's Guide for RAM. Publication No. EPA-600/8-78-016 Vols a, and b. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS PB 294791 and PB 294792).

Reference:

Catalano, J. A., D. B. Turner, and H. Novak, 1987. User's Guide for RAM—Second Edition. U.S. Environmental Protection Agency, Research Triangle Park, NC. (Distributed as part of UNAMAP, Version 6, Documentation)

Availability:

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products National Technical Information Service : U. S. Department of Commerce, Springfield, Virginia 22161 Phone (703) 487-4650

Abstract:

RAM is a steady-state Gaussian plume model for estimating concentrations of relatively stable pollutants, for averaging times from an hour to a day, from point and area sources in a rural or urban setting. Level terrain is assumed. Calculations are performed for each hour.

a. Recommendations for Regulatory Use

RAM is appropriate for the following applications:

Point and area sources;

Urban areas;

Flat terrain;

Transport distances less than 50 kilometers; and

One hour to one year averaging times.

The following options should be selected for regulatory applications:

Set the regulatory "default option" to automatically select stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), a treatment for calms, the appropriate wind profile exponents, and the appropriate value for pollutant half-life.

b. Input Requirements

Source data: Point sources require location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter and stack gas temperature. Area sources require location, size, emission rate, and height of emissions.

Meteorological data: Hourly surface weather data from the preprocessor program RAMMET which provides hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required.

Receptor data: Coordinates of each receptor. Options for automatic placement of receptors near expected concentration maxima, and a gridded receptor array are included.

c. Output

Printed output optionally includes:
One to 24-hour and annual average concentrations at each receptor,
Limited individual source contribution list, and
Highest through fifth highest concentrations at each receptor for period, with the highest and high, second-high values flagged.

d. Type of Model

RAM is a Gaussian plume model.

e. Pollutant Types

RAM may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

RAM applies user-specified locations for all point sources and receptors.

Area sources are input as multiples of a user-defined unit area source grid size.

User specified stack heights are applied for individual point sources.

Up to 3 effective release heights may be specified for the area sources. Area source release heights are assumed to be appropriate for a 5 meter per second wind and to be inversely proportional to wind speed.

Actual separation between each source-receptor pair is used.

All receptors are assumed to be at the same height at or above ground level.

No terrain differences between source and receptor are accounted for.

g. Plume behavior

RAM uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

A user supplied fraction of the area source height is treated as the physical height. The remainder is assumed to be plume rise for a 5 meter per second wind speed, and to be inversely proportional to wind speed.

Fumigation and building downwash are not treated.

h. Horizontal Winds

Constant, uniform (steady state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (EPA, 1990) for urban cases are used.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. Vertical Dispersion

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.8 times the mixing height; uniform vertical sizing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is not explicitly treated.

n. Evaluation Studies

Ellis, H., P. Lou, and G. Dalzell, 1980.

Comparison Study of Measured and Predicted Concentrations with the RAM Model at Two Power Plants Along Lake Erie, Second Joint Conference on Applications of Air Pollution Meteorology, New Orleans, LA.

Environmental Research and Technology, 1980. SO₂ Monitoring and RAM (Urban) Model Comparison Study in Summit County, Ohio. Document P-3618-152, Environmental Research & Technology, Inc., Concord, MA, 1980.

Guldberg, P. H., and C. W. Kern, 1978. A Comparison Validation of the RAM and PTMTP Models for Short-Term Concentrations in Two Urban Areas, Journal of Air Pollution Control Association, 28:907-910.

Hodanbosi, R. R., and L. K. Peters, 1981. Evaluation of RAM Model for Cleveland, Ohio, "Journal of Air Pollution Control Association, 31:253-255,

Kennedy, K. H., R. D. Siegel, and M. P. Steinberg, 1981. Case-Specific Evaluation of the RAM Atmospheric Dispersion Model in an Urban Area, 74th Annual Meeting of the American Institute of Chemical Engineers, New Orleans, LA.

Kummier, R. H., B. Cho, G. Roginski, R. Sinha and A. Greenburg, 1979. A Comparative Validation of the RAM and Modified SAI Models for Short-Term SO₂ Concentrations in Detroit, "Journal of Air Pollution Control Association, 29:720-723.

Lonergan, R. J., N. E. Bowne, D. R. Murray, H. Borenstein, and J. Mangano, 1980. An Evaluation of Short-Term Air Quality Models Using Tracer Study Data, Report No. 4333, American Petroleum Institute, Washington, DC.

Morgenstern, P., M. J. Geraghty, and A. McKnight, 1979. A Comparative Study of the RAM (Urban) and RAMR (Rural) Models for Short-term SO₂ Concentrations in Metropolitan Indianapolis. 72nd Annual Meeting of the Air Pollution Control Association, Cincinnati, OH.

Ruff, R. E. 1980. Evaluation of the RAM Using the RAPS Data Base, Contract 68-02-2770, SRI International, Menlo Park, CA.

Lonergan, R., D. Minott, D. Wackter, and R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models. EPA Publication No. EPA 450/4-83-020, U.S. Environmental Protection Agency, Research Triangle Park, NC.

A.5 Industrial Source Complex Model (ISC) Reference

Environmental Protection Agency, 1986.

Industrial Source Complex (ISC) Dispersion Model User's Guide, Second Edition, Volumes 1 and 2. Publication Nos. EPA-450/4-86-005a, and -005b. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS PB86 234259 and PB86 234267).

Environmental Protection Agency, 1987.

Industrial Source Complex (ISC) Dispersion Model. Addendum to the User's Guide. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, Phone (703) 487-4650.

Abstract

The ISC model is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex. This model can account for the following: settling and dry deposition of particulates; downwash; area, line and volume sources; plume rise as a function of downwind distance; separation of point sources; and limited terrain adjustment. It operates in both long-term and short-term modes.

a. Recommendations for Regulatory Use

ISC is appropriate for the following applications:

Industrial source complexes;
Rural or urban areas;
Flat or rolling terrain;
Transport distances less than 50 kilometers; and

One hour to annual averaging times.

The following options should be selected for regulatory applications:

For short term modeling, set the regulatory "default option" (ISW(28)=1), which automatically selects stack tip downwash, final plume rise, buoyancy induced dispersion (BID), the vertical potential temperature gradient, a treatment for calms, the appropriate wind profile exponents, the appropriate value for pollutant half-life, and a revised building wake effects algorithm; set rural option (ISW(20)=0) or urban option (ISW(20)=3); and set the concentration option (ISW(1)=1).

For long term modeling, set the regulatory "default option" (ISW(22)=0), which automatically selects stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), the vertical potential temperature gradient, the appropriate wind profile exponents, and the appropriate value for pollutant half-life, and a revised building wake effects algorithm; set rural option (ISW(9)=3) or urban option (ISW(9)=4); and set the concentration option (ISW(1)=1).

b. Input Requirements

Source data: Location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature. Optional inputs include source elevation, building dimensions, particle size distribution with corresponding settling velocities, and surface reflection coefficients.

Meteorological data: ISCST requires hourly surface weather data from the preprocessor program RAMMET, which provides hourly stability class, wind direction, wind speed, temperature, and mixing height. For ISCLT, input includes stability wind rose (STAR deck), average afternoon mixing height, average morning mixing height, and average air temperature.

Receptor data: coordinates and optional ground elevation for each receptor.

c. *Output*

Printed output options include:

Program control parameters, source data and receptor data;

Tables of hourly meteorological data for each specified day;

"N"-day average concentration or total deposition calculated at each receptor for any desired combinations of sources;

Concentration or deposition values calculated for any desired combinations of sources at all receptors for any specified day or time period within the day;

Tables of highest and second-highest concentration or deposition values calculated at each receptor for each specified time period during an "N"-day period for any desired combinations of sources; and tables of the maximum 50 concentration or deposition values;

Calculated for any desired combinations of sources for each specified time period.

d. *Type of Model*

ISC is a Gaussian plume model.

e. *Pollutant Types*

ISC may be used to model primary pollutants. Settling and deposition are treated.

f. *Source-Receptor Relationships*

ISC applies user-specified locations for point, line, area and volume sources, and user-specified receptor locations or receptor rings.

User input topographic elevation for each receptor is used. Elevations above stack top are reduced to the stack top elevation, i.e., "terrain chopping".

User input height above ground level may be used when necessary to simulate impact at elevated or "flag pole" receptors, e.g., on buildings.

Actual separation between each source-receptor pair is used.

g. *Plume Behavior*

ISC uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

Revised building wake effects algorithm is used. For stacks higher than building height plus one-half the lesser of the building height or building width, the building wake algorithm of Huber and Snyder (1976) is used. For lower stacks, the building wake algorithm of Schulman and Scire (Schulman and

Hanna, 1986) is used, but stack tip downwash and BID are not used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above source.

Fumigation is not treated.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for each hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (EPA, 1980) for both rural and urban cases are used.

An optional treatment for calm winds is included for short term modeling.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used, with no adjustments for surface roughness or averaging time.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used, with no adjustments for surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. *Physical Removal*

Settling and dry deposition of particulates are treated.

n. *Evaluation Studies*

Bowers, J. F., and A. J. Anderson, 1981. An Evaluation Study for the Industrial Source Complex (ISC) Dispersion Model. EPA Publication No. EPA-450/4-81-002. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Bowers, J. F., A. J. Anderson, and W. R. Hargraves, 1982. Tests of the Industrial Source Complex (ISC) Dispersion Model at the Armco Middletown, Ohio Steel Mill. EPA Publication No. EPA-450/4-82-006. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Scire, J. S., and L. L. Schulman, 1981. Evaluation of the BLP and ISC Models with SF₆ Tracer Data and SO₂ Measurements at Aluminum Reduction Plants. Air Pollution Control Association Specialty Conference on Dispersion Modeling for Complex Sources, St. Louis, MO.

Schulman, L. L., and S. R. Hanna, 1986.

Evaluation of Downwash Modifications to the Industrial Source Complex Model. Journal of the Air Pollution Control Association, 36:258-264.

A.6 Multiple Point Gaussian Dispersion Algorithm with Terrain Adjustment (MPTER)

Reference

Pierce, Thomas D. and D. Bruce Turner, 1980. User's Guide for MPTER. EPA Publication No. EPA-600/8-80-016. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB-80-197361).

Chico, T. and J.A. Catalano, 1986. Addendum to the User's Guide for MPTER. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. (Distributed as part of UNAMAP, Version 6, Documentation)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, Phone (703) 487-4650.

Abstract

MPTER is a Multiple Point Source Algorithm. This algorithm is useful for estimating air quality concentrations of relatively non-reactive pollutants. Hourly estimates are made using the Gaussian steady state model.

a. *Recommendations for Regulatory Use*

MPTER is appropriate for the following applications:

Point sources;

Rural or urban areas;

Flat or rolling terrain (no terrain above stack height);

Transport distances less than 50 kilometers; and

One hour to one year averaging times.

The following options should be selected for regulatory applications:

Set the regulatory "default option" (IOPT(25)=1) to automatically select stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), a treatment for calms, the appropriate wind profile exponents, and the appropriate value for pollutant half-life.

b. *Input Requirements*

Source data: location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature, and optional ground level elevation.

Meteorological data: hourly surface weather data from the preprocessor program RAMMET which provides hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required.

Receptor data: coordinates and optional ground elevation for each receptor.

c. *Output*

Printed output includes:

One to 24-hour and annual average concentrations at each receptor; Highest through fifth highest concentrations at each receptor for period, with the highest and high, second-high values flagged; and

Limited source contribution table.

d. Type of Model

MPTER is a Gaussian plume model.

e. Pollutant Types

MPTER may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

MPTER applies user-specified locations of point sources and receptors.

User input stack height and source characteristics for each source are used.

User input topographic elevation for each receptor is used.

g. Plume Behavior

MPTER uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above the source.

Fumigation and building downwash are not treated.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (EPA, 1980) for both rural and urban cases are used.

i. Vertical Wind Speed

Vertical speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for variations in surface roughness or averaging times.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976), is included.

Six stability classes are used.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used, with no adjustments made for variations in surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976), is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is not explicitly treated.

n. Evaluation Studies

No specific studies for MPTER because regulatory editions of CRSTER and MPTER are equivalent. Studies for CRSTER are relevant to MPTER as well (See page A-32).

A.7 Single Source (CRSTER) Model

Reference

Environmental Protection Agency, 1977.

User's Manual for Single Source (CRSTER) Model. EPA Publication No. EPA-450/2-77-013. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 271360).

Catalano, J.A., 1986. Single Source (CRSTER) Model. Addendum to the User's Manual. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. (Distributed as part of UNAMAP, Version 6, Documentation)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

CRSTER is a steady state, Gaussian dispersion model designed to calculate concentrations from point sources at a single location in either a rural or urban setting. Highest and high-second high concentrations are calculated at each receptor for 1-hour, 3-hour, 24-hour, and annual averaging time.

a. Recommendations for Regulatory Use

CRSTER is appropriate for the following applications:

Single point sources;

Rural or urban areas;

Transport distances less than 50 kilometers; and

Flat or rolling terrain (no terrain above stack height).

The following options should be selected for regulatory applications:

Set the regulatory "default option" which automatically selects stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), a treatment for calms, the appropriate wind profile exponents, and the appropriate value for pollutant half-life.

b. Input Requirements

Source data: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature.

Meteorological data: Hourly surface weather data from the preprocessor program RAMMET. Preprocessor output includes hourly stability class wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required.

Receptor data: require distance of each of the five receptor rings.

c. Output

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging

times of 1, 3, and 24-hours, plus a user-selected averaging time which may be 2, 4, 6, 8, or 12 hours;

Annual arithmetic average at each receptor;

For each day, the highest 1-hour and 24-hour concentrations over the receptor field; and

Option for source contributions to concentrations at selected receptors.

d. Type of Model

CRSTER is a Gaussian plume model.

e. Pollutant Types

CRSTER may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

CRSTER treats up to 19 point sources, no area sources.

All point sources are assumed collocated.

User input stack height is used for each source.

User input topographic elevation is used for each receptor, but must be below top of stack or program will terminate execution.

Receptors are assumed at ground level.

g. Plume Behavior

CRSTER uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above the source.

Fumigation and building downwash are not treated.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Separate set of wind speed profile exponents (EPA, 1980) for both rural and urban cases are used.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used in CRSTER with no adjustments made for variations in surface roughness or averaging times.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1975) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is not explicitly treated.

n. Evaluation Studies

Klug, W., 1974. Dispersion from Tall Stacks. Fifth NATO/CCMS International Technical Meeting on Air Pollution Modeling, Denmark.

Lonergan, R.J., N.E. Bowne, D.R. Murray, H. Borenstein, and J. Mangano, 1980. An Evaluation of Short-Term Air Quality Models Using Tracer Study Data, Report No. 3. American Petroleum Institute, Washington, DC.

Mills, M.T., R. Caiazza, D.D. Hergert, and D.A. Lynn, 1981. Evaluation of Point Source Dispersion Models. EPA Publication No. EPA-450/4-81-032. U.S. Environmental Protection Agency, Research Triangle Park, NC.

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TRC-Environmental Consultants, Inc., 1983. Overview, Results, and Conclusions for the EPRI Plume Model Validation and Development Project: Plains Site, EPRI EA-3074. Electric Power Research Institute, Palo Alto, CA.

A.8 Urban Airshed Model (UAM)

References

Ames, J., T. C. Myers, L. E. Reid, D. C. Whitney, S. H. Golding, S.R. Hayes, and S. D. Reynolds, 1985. SAI Airshed Model Operations Manuals—Volume I—User's Manual. EPA Publication No. EPA-600/8-85-007a. U. S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 85-191567).

Ames, J. S., R. Hayes, T. C. Myers, and D. C. Whitney, 1985. SAI Airshed Model Operations Manuals—Volume II—Systems Manual. EPA Publication No. EPA-600/8-85-007b. U. S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 85-191575).

Environmental Protection Agency, 1980. Guideline for Applying the Airshed Model to Urban Areas. Publication No. EPA 450/4-80-020. U. S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 81-200529).

Availability

The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

UAM is an urban scale, three dimensional, grid type, numerical simulation model. The model incorporates a condensed photochemical kinetics mechanism for urban atmospheres. The UAM is designed for computing ozone (O_3) concentrations under short-term, episodic conditions lasting one or two days resulting from emissions of oxides of nitrogen (NO_x) and volatile organic compounds (VOC). The model treats urban VOC emissions as their carbon-bond surrogates.

a. Recommendations for Regulatory Use

UAM is appropriate for the following applications: Single urban areas having significant ozone attainment problems in the absence of interurban emission transport; and one hour averaging times.

UAM has many options but no specific recommendations can be made at this time on all options. The reviewing agency should be consulted on selection of options to be used in regulatory applications. At the present time, the following options should be selected for regulatory applications:

Omit SO_2 and AEROSOLS from the SPECIES packet for the CHEMPARAM file; Set ROADWAY flag to FALSE in the SIMULATION packet for the SIM-CONTROL file; and

Set surface layer height to zero in the REGION packet for the AIRQUALITY, BOUNDARY, DIFFBREAK, METSCALARS, PTSOURCE, REGIONTOP, TEMPERATUR, TERRAIN, TOPCONC, and WIND files.

b. Input Requirements

Source data: Gridded, hourly emissions of PAR, OLE, ETH, ARO, CARB, NO, and NO_x for low-level sources. CO is optional. For major elevated point sources, hourly emissions, stack height, stack diameter, exit velocity, and exit temperature.

Meteorological data: Hourly, gridded, divergence free, u and v wind components for each vertical level; hourly gridded mixing heights; hourly gridded surface temperatures; hourly exposure class; hourly vertical potential temperature gradient above and below the mixing height; hourly surface atmospheric pressure; hourly water mixing ratio; and gridded surface roughness lengths.

Air quality data: Concentration of O_3 , NO, NO_x , PAR, OLE, ETH, ARO, CARB, PAN, and CO at the beginning of the simulation for each grid cell; and hourly concentrations of each pollutant at each level along the inflow boundaries and top boundary of the modeling region.

Other data requirements are: Hourly mixed layer average, NO_x photolysis rates; and

ozone surface uptake resistance along with associated gridded vegetation (scaling) factors.

c. Output

Printed output includes: Gridded instantaneous concentration fields at user-specified time intervals for user-specified pollutants and grid levels; Gridded time average concentration fields for user-specified time intervals, pollutants, and grid levels.

d. Type of Model

UAM is a three dimensional, numerical photochemical grid model.

e. Pollutant Types

UAM may be used to model ozone (O_3) formation from oxides of nitrogen (NO_x) and volatile organic compound (VOC) emissions.

f. Source-Receptor Relationship

Low-level area and point source emissions are specified within each surface grid cell.

Up to 500 major point sources are allowed. Hourly average concentrations of each pollutant are calculated for all grid cells at each vertical level.

g. Plume Behavior

Plume rise is calculated for major point sources using relationships recommended by Briggs (1971).

h. Horizontal Winds

See Input Requirements.

i. Vertical Wind Speed

Calculated at each vertical grid cell interface from the mass continuity relationship using the input gridded horizontal wind field.

j. Horizontal Dispersion

Horizontal eddy diffusivity is set to a user specified constant value (nominally $50 \text{ m}^2/\text{s}$).

k. Vertical Dispersion

Vertical eddy diffusivities for unstable and neutral conditions calculated using relationships of Lamb et al. (1977); for stable conditions, the relationship of Businger and Arya (1974) is employed. Stability class, friction velocity, and Monin-Obukhov length determined using procedure of Liu et al. (1976).

l. Chemical Transformation

UAM employs a simplified version of the Carbon-Bond II Mechanism (CBM-II) developed by Whitten, Killus, and Hogo (1980) employing various steady-state approximations. CBM-II is further simplified during nighttime hours to improve computational efficiency. CBM-II utilizes five carbon-bond species (PAR-single bonded carbon atoms; OLE-terminal double bonded carbon atoms; ETH-ethylene; ARO-alkylated aromatic rings; and CARB-aldehydes, ketones, and surrogate carbonyls) which serve as surrogates for the large variety of emitted organic compounds in the urban atmosphere.

m. Physical Removal

Dry deposition of ozone and other pollutant species are calculated. Vegetation (scaling) factors are applied to the reference surface

uptake resistance of each species depending on land use type.

n. Evaluation Studies

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Reynolds, 1982. Evaluation of the Performance of a Photochemical Dispersion Model in Practical Applications, 13th International Technical Meeting on Air Pollution Modeling and Its Application, Ile des Embiez, France.

Cole, H.S., D.E. Layland, G.K. Moss, and C.F. Newberry, 1983. The St. Louis Ozone Modeling Project. EPA Publication No. EPA 450/4-83-019. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Dennis, R.L., M.W. Downton, and R.S. Keil, 1983. Evaluation of Performance Measures for an Urban Photochemical Model. EPA Publication No. EPA 450/4-83-021. U.S. Environmental Protection Agency, Research Triangle Park, NC.

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Layland, D.E. and H.S. Cole, 1983. A Review of Recent Applications of the SAI Urban Airshed Model. EPA Publication No. EPA 450/4-84-004. U.S. Environmental Protection Agency, Research Triangle Park, NC.

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Reynolds, S.D., H. Hogo, W.R. Oliver, L.E. Reid, 1982. Application of the SAI Airshed Model to the Tulsa Metropolitan Area, SAI No. 82004. Systems Applications, Inc., San Rafael, CA.

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Tesche, T.W., W.R. Oliver, H. Hogo, P. Saxeena and J.L. Haney, 1983. Volume IV—Assessment of NO_x Emission Control Requirements in the South Coast Air Basin—Appendix A. Performance Evaluation of the Systems Applications Airshed Model for the 26–27 June 1974 O₃ Episode in the South Coast Air Basin, SYSAPP 83/037. Systems Applications, Inc., San Rafael, CA.

Tesche, T.W., W.R. Oliver, H. Hogo, P. Saxeena and J.L. Haney, 1983. Volume IV—Assessment of NO_x Emission Control Requirements in the South Coast Air Basin—Appendix B. Performance Evaluation of the Systems Applications Airshed Model for the 7–8 November 1978 NO_x Episode in the South Coast Air Basin, SYSAPP 83/038. Systems Applications, Inc., San Rafael, CA.

A.9 Offshore and Coastal Dispersion Model (OCD)

Reference

Hanna, S.R., L.L. Schulman, R.J. Paine and J.E. Pleim, 1984. The Offshore and Coastal Dispersion (OCD) Model User's Guide, Revised. OCS Study, MMS 84-0069. Environmental Research and Technology, Inc., Concord, MA. (NTIS PB 86-159803)

Availability

The above user's guide is available for \$40.95 from NTIS. The computer tape is available from NTIS as number PB85-246106 at a cost of \$600.

Technical Contact

Minerals Management Service, 12203 Sunrise Valley Drive, Mail Stop 644, Reston, VA 22091, ATTN: Mitchell Baer.

Abstract

OCD is a straight-line Gaussian model developed to determine the impact of offshore emissions from point sources on the air quality of coastal regions. OCD incorporates overwater plume transport and dispersion as well as changes that occur as the plume crosses the shoreline. Hourly meteorological data are needed from both offshore and onshore locations. These include water surface temperature and overwater air temperature and relative humidity.

Some of the key features include platform building downwash, partial plume penetration into elevated inversions, direct use of turbulence intensities for plume dispersion, interaction with the overland internal boundary layer, and continuous shoreline fumigation.

a. Recommendations for Regulatory Use

OCD has been recommended for use by the Minerals Management Service for emissions located on the Outer Continental Shelf

(Federal Register 50, 12248, 28 March 1985). OCD is applicable for overwater sources where onshore receptors are below the lowest source height. Where onshore receptors are above the lowest source height, offshore plume transport and dispersion may be modeled on a case-by-case basis in consultation with the EPA Regional Office.

b. Input Requirements

Source data: Point source location, pollutant emission rate, building height, stack height, stack gas temperature, stack inside diameter, stack gas exit velocity, stack angle from vertical, elevation of stack base above water surface and gridded specification of the land/water surfaces. As an option, emission rate, stack gas exit velocity and temperature can be varied hourly.

Meteorological data (overwater): Wind direction, wind speed, mixing height, relative humidity, air temperature, water surface temperature, vertical wind direction shear (optional), vertical temperature gradient (optional), turbulence intensities (optional). For all meteorological input variables, hourly data are preferred to climatological values.

Meteorological data (overland): Wind direction, wind speed, temperature, stability class, mixing height.

Receptor data: Location, height above local ground-level, ground-level elevation above the water surface.

c. Output

All input options, specification of sources, receptors and land/water map including locations of sources and receptors.

Summary tables of five highest concentrations at each receptor for each averaging period, and average concentration for entire run period at each receptor.

Optional case study printout with hourly plume and receptor characteristics.

Concentration files written to disk or tape can be used by ANALYSIS postprocessor to produce the highest concentrations for each receptor, the cumulative frequency distributions for each receptor, the tabulation of all concentrations exceeding a given threshold, and the manipulation of hourly concentration files.

d. Type of Model

OCD is a Gaussian plume model constructed on the framework of the MP TER model.

e. Pollutant Types

OCD may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

Up to 250 point sources and 180 receptors may be used.

Receptors and sources are allowed at any location.

The coastal configuration is determined by a grid of up to 3600 rectangles. Each element of the grid is designated as either land or water to identify the coastline.

g. Plume Behavior

As in MP TER, the basic plume rise algorithms are based on Briggs' recommendations.

Momentum rise includes consideration of the stack angle from the vertical.

The effect of drilling platforms, ships, or any overwater obstructions near the source are used to decrease plume rise following the approach of the BLP model.

Partial plume penetration of elevated inversions is included using the suggestions of Briggs (1975) and Weil and Brower (1984).

If overwater conditions are stable and overland conditions unstable, the Deardorff-Willis (1982) fumigation model is used to simulate the entrainment of the plume in the rising thermal internal boundary layer. The fumigation calculations are used only if the concentrations are lower than those resulting from the change to overland dispersion coefficients at the water/land interface.

h. Horizontal Winds

Constant, uniform wind is assumed for each hour.

Overwater wind speed can be estimated from overland wind speed using relationship of Hsu (1981).

Wind speed profiles are estimated using similarity theory (Businger 1973). Surface layer fluxes for these formulas are calculated from bulk aerodynamic methods.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Lateral turbulence intensity is recommended as a direct estimate of horizontal dispersion. If lateral turbulence intensity is not available, it is estimated from boundary layer theory. For wind speeds less than 10 m/s, lateral turbulence intensity is assumed inversely proportional to wind speed.

Horizontal dispersion may be enhanced because of obstructions near the source. A virtual source technique, as in the BLP model, is used to simulate the initial plume dilution due to downwash.

Formulas recommended by Pasquill (1976) are used to calculate buoyant plume enhancement and wind direction shear enhancement.

At the water/land interface, the change to overland dispersion rates is modeled using a virtual source. The overland dispersion rates can be calculated from either lateral turbulence intensity or the Turner (1969) coefficients. The change is implemented where the plume intercepts the rising internal boundary layer.

k. Vertical Dispersion

Vertical turbulence intensity is recommended as a direct estimate of vertical dispersion. If not available, turbulence intensity is estimated from boundary layer theory. For very stable conditions, vertical dispersion is also a function of lapse rate.

Vertical dispersion may be enhanced because of obstructions near the source. A virtual source technique, as in the BLP model, is used to simulate the initial plume dilution due to downwash.

Formulas recommended by Pasquill (1976) are used to calculate buoyant plume enhancement.

At the water/land interface, the change to overland dispersion rates is modeled using a

virtual source. The overland dispersion rates can be calculated from either vertical turbulence intensity or the Turner (1969) coefficients. The change is implemented where the plume intercepts the rising internal boundary layer.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Different rates can be specified by month and by day or night.

m. Physical Removal

Physical removal is also treated using exponential decay.

n. Evaluation Studies

Hanna, S.R., L.L. Schulman, R.J. Paine and J.E. Pleim, 1984. The Offshore and Coastal Dispersion (OCD) Model User's Guide, Revised. OCS Study, MMS 84-0069. Environmental Research & Technology, Inc., Concord, MA. (NTIS No. PB 86-159803)

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Meteorology and Assessment Division, Office of Research and Development, Research Triangle Park, NC.

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Irwin, J.S., 1979. A Theoretical Variation of the Wind Profile Power-Law Exponent as a Function of Surface Roughness and Stability. Atmospheric Environment, 13:191-194.

Lamb, R.G., et al., 1977. Continued Research in Mesoscale Air Pollution Simulation Modeling—Vol. VI: Further Studies in the Modeling of Microscale Phenomena, Report Number EF77-143. Systems Applications, Inc., San Rafael, CA.

Larsen, R.I., 1971. A Mathematical Model for Relating Air Quality Measurements to Air Quality Standards. Office of Air Programs Publication No. AP-89. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Liu, M.K., et al., 1976. The Chemistry, Dispersion, and Transport of Air Pollutants Emitted from Fossil Fuel Power Plants in California: Data Analysis and Emission Impact Model. Systems Applications, Inc., San Rafael, CA.

McElroy, J.L. and F. Pooler, Jr., 1968. St. Louis Dispersion Study Volume II—Analysis. NAPCA Publication No. AP-53. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Moore, G.E., T.E. Stoeckenius and D.A. Stewart, 1982. A Survey of Statistical Measures of Model Performance and Accuracy for Several Air Quality Model. EPA Publication No. EPA 450/4-83-001. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Pasquill, F., 1976. Atmospheric Dispersion Parameters in Gaussian Plume Modeling Part II. Possible Requirements for Change in the Turner Workbook Values. EPA Publication No. EPA 600/4-76-030b. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Turner, D.B., 1969. Workbook of Atmospheric Dispersion Estimates. PHS Publication No. 999-26. U.S. Environmental Protection Agency, Research Triangle Park, NC.

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Appendix B to appendix X to Part 266—Summaries of Alternative Air Quality Models

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- B.6 ERT Visibility Model
- B.7 Hiway-2
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- B.9 Longz
- B.10 Maryland Power Plant Siting Program (PPSP) Model
- B.11 Mesoscale Puff Model (MESOPUFF II)
- B.12 Mesoscale Transport Diffusion and Deposition Model for Industrial Sources (MTDDIS)
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- B.0 Introduction

This appendix summarizes key features of refined air quality models that may be considered on a case-by-case basis for

individual regulatory applications. For each model, information is provided on availability, approximate cost in 1986*, regulatory use, data input, output format and options, simulation of atmospheric physics and accuracy. These summaries are based directly on information supplied by the model developers and have been included without change. The Models are listed by name in alphabetical order.

There are three separate conditions under which these models will normally be approved for use: first, if a demonstration can be made that the model produces concentration estimates equivalent to the estimates obtained using a preferred model (e.g. the maximum or high, second-high concentration is within 2% of the estimate using the comparable preferred model); second, if a statistical performance evaluation has been conducted using measured air quality data and the results of that evaluation indicate the model in appendix B performs better for the application than a comparable model in appendix A; and third, if there is no preferred model for the specific application but a refined model is needed to satisfy regulatory requirements. Any one of these three separate conditions may warrant use of these models. See section 3.2, Use of Alternative Models, for additional details.

Many of these models have been subjected to a performance evaluation by comparison with observed air quality data. A summary of such comparisons for models contained in this appendix is included in "A Survey of Statistical Measures of Model Performance and Accuracy for Several Air Quality Models," EPA-450/4-83-001. Where possible, several of the models contained herein have been subjected to rigorous evaluation exercises, including (1) statistical performance measures recommended by the American Meteorological Society and (2) peer scientific reviews.

B.1 Air Quality Display Model (AQDM)

Reference

TRW Systems Group, 1969. Air Quality Display Model. Prepared for National Air Pollution Control Administration, DHEW, U.S. Public Health Service, Washington, DC. (NTIS No. PB 189194).

Availability

The above User's Guide is available from NTIS at a cost of \$16.95. This model is available at no cost in the form of a punched card deck from: Library Services, MD-35, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attn: Ann Ingram.

Abstract

AQDM is a climatological steady state Gaussian plume model that estimates annual arithmetic average sulfur dioxide and particulate concentrations at ground level in urban areas. A statistical model based on Larsen (1971) is used to transform the average concentration data from a limited

number of receptors into expected geometric mean and maximum concentration values for several different averaging times.

a. Recommendations for Regulatory Use

AQDM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. AQDM must be executed in the equivalent mode.

AQDM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that AQDM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Average emissions rates and heights of emissions for point and area sources; stack gas temperature, stack gas exit velocity, and stack inside diameter for plume rise calculations for point sources.

Meteorological data requirements are: Stability wind rose (STAR deck), average afternoon mixing height, average morning mixing height, and average air temperature.

Receptor data requirements are: Number and locations of receptors. If the Larsen transform option is to be used to estimate short averaging time concentrations, measured standard geometric deviation of concentrations is required.

c. Output

Printed output includes:

One month to one year average concentrations (arithmetic mean only) at each receptor;

Optional arbitrary averaging time by Larsen (1971) procedure (typically 1-24 hr); and

Optional individual point, area source culpability list for each receptor.

d. Type of Model

AQDM is a Gaussian plume model.

e. Pollutant Types

AQDM may be used to model non-reactive pollutants. Settling and deposition are not treated.

f. Source Receptor Relationship

AQDM applies user-specified locations and stack height for each point source.

AQDM uses any location and size for each area source.

Up to 225 receptors may be located on uniform rectangular grid.

Up to 12 user-specified receptor locations are permitted.

Unique release height is used for each point and area source.

Receptors are assumed to be at ground level.

No terrain differences between source and receptor are treated.

g. Plume Behavior

AQDM uses Briggs (1969) plume rise formulas.

No plume rise is calculated for area sources.

Fumigation and downwash are not treated.

*All models on UNAMAP (Version 6) are available from NTIS at a price consistent with the previous version of UNAMAP.

Zero concentration is assumed when plume height is greater than mixing height.

h. Horizontal Winds

Wind data are input as stability wind rose (joint frequency distribution) of 16 wind directions, six wind speed classes, and five stability classes.

No variation in wind speed with height is assumed.

Constant, uniform (steady-state) wind is assumed.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Pollutants are assumed evenly distributed across a 22.5 degree sector.

Frequency of occurrence of a meteorological state is interpolated between sector center lines.

Averaging times from 1 month to 1 year or longer are treated.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1989) are used.

Five stability classes are as defined by Turner (1984). Stability classes E and F are combined, and assigned dispersion values equivalent to stability class D.

Neutral stability is split internally into 60% day, 40% night, with the two differing only in the treatment of mixing height.

Mixing height is a function of a single input afternoon mixing height a single input morning mixing height, modified by the stability class.

l. Chemical Transformations

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

NcNidar, R.R., 1977. Variability Analysis of Long-term Dispersion Models. Joint Conference on Applications of Air Pollution Meteorology, American Meteorology Society, 29 Nov.-2 Dec., 1977, Salt Lake City, UT.

Turner, D.B., J.R. Zimmerman, and A.D. Busse, 1973. An Evaluation of Some Climatological Dispersion Models. In Appendix E, User's Guide to the Climatological Dispersion Model, EPA Publication No. EPA-R4-73-024, Environmental Protection Agency, Research Triangle Park, NC.

Lonergan, R.J., D.H. Minott, D.J. Wachter and R.R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models, EPA Publication No. EPA-450/4-83-020, U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.2 Air Resources Regional Pollution Assessment (ARRPA) Model

Reference

Mueller, S.F., R.J. Valente, T.L. Crawford, A.L. Sparks, and L.L. Gautney, Jr., 1983. Description of the Air Resources Regional Pollution Assessment (ARRPA) Model. TVA/ONR/AQB-83/14. Tennessee Valley Authority, Muscle Shoals, AL.

Availability

The computer code and sample input for this model on magnetic tape and a copy of the User's Guide are available from: Computer Services Development Branch, Office of Natural Resources and Economic Development, Tennessee Valley Authority, OSWHA, Muscle Shoals, Alabama 35660, phone (205) 386-2985. A hard copy of the model output corresponding with the sample input is also available. The cost of copying model information to a buyer-supplied 2400-ft. high density tape is estimated to be about \$100. The User's Guide is free of charge.

Abstract

The ARRPA model is a medium/long-range segmented-plume model. It is designed to compute air concentrations and surface dry mass deposition of sulfur dioxide and sulfate. A unique feature of the model is its use of prognostic meteorological output from the National Weather Service Boundary Layer Model (BLM). Boundary layer conditions are computed by the BLM on a grid with a spatial resolution of 80 km, and are archived in intervals of 3 hours. BLM output used by this model includes three dimensional wind field components and potential temperature at 10 height levels from the surface through 2000 m above the surface.

a. Recommendations for Regulatory Use

Use of the model for transport distances of less than 10 km is not recommended. For 10 km to beyond 50 km, there is no specific recommendation at the present time. The model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements: Location (latitude and longitude), stack height, stack diameter, stack gas exit velocity, stack gas temperature, SO₂ emission rate, SO₄ emission rate, stack base elevation.

Meteorological data requirements: Hourly wind field components (u,v,w), potential temperature (θ), Pasquill-Gifford stability class and mixing height. These data are obtained as output from the BLM output preprocessing program called MDPP (S.F. Mueller and R.J. Valente, 1983). Required input to MDPP is BLM output (in three-hour intervals) of u, v, w, and θ , surface layer friction velocity (u^*) and surface layer values of the inverse Monin-Obukhov length (L^{-1}).

Receptor data requirements: Gridded receptor array coordinates (x and y) and receptor heights (z) from a receptor preprocessing program called HEIGHT. HEIGHT produces a user-designed array of points which may be skewed up to ± 90 degrees relative to the model x axis. The elevation of each receptor is adjusted to give height above smoothed model terrain. Non-

gridded receptors can be specified using latitude/longitude coordinates.

c. Output

Printed output includes:

Listings of input parameters (except for meteorological data);

Listing of hours processed and flags for missing data periods.

Disk output: Parameters for controlling analysis and printout options in the postprocessing program called ANALYSIS; hourly SO₂ and SO₄ air concentrations and dry deposition amounts at each receptor.

Optional printed output: Two programs are available for displaying model output—DISPLAY and ANALYSIS; DISPLAY prints out hourly gridded concentration and/or deposition fields for user-specified time periods; ANALYSIS prints out (1) the five highest concentrations of SO₂ and/or SO₄ at each receptor for 1-hour, 3-hour (optional) and 24-hour (optional) averaging periods, (2) average SO₂ and/or SO₄ concentrations at each receptor for the entire analysis period and (3) gridded SO₂ and/or SO₄ dry deposition amounts for the day having the greatest dry deposition and for the entire analysis period.

d. Type of Model

The ARRPA model is a Gaussian segmented-plume model.

e. Pollutant Types

SO₂ and SO₄ are treated.

f. Source-Receptor Relationship

One source is treated per model run, though results from several sources may be superimposed.

Either constant or variable emission rates may be used.

Receptors (up to 100) in gridded network may have different elevations.

Height of receptors above ground is variable.

g. Plume Behavior

Plume rise is computed in a piecewise-continuous manner through discrete model layers (Mueller, et al., 1983).

Plume can be isolated from the ground (lofting).

Plume height varies in time and space.

h. Horizontal Winds

Hourly horizontal wind components, specified at 80-km intervals across the model grid, are spatially interpolated and vertically averaged through the plume depth to get plume transport vectors. A model option is available that uses the wind vector near the vertical plume center instead of computing a vertically-averaged vector.

i. Vertical Wind Speed

The mass-conserving BLM wind field used in this model provides vertical wind components that vary horizontally and vertically, and are used to adjust plume height.

j. Horizontal Dispersion

Plume half-width (σ_y) growth goes through four stages:

(1) Growth follows Turner curves for $\sigma_y < 1000$ m;

(2) A transition in growth behavior from Turner curves to dynamical-statistical (Langevin) theory occurs for $1000 \text{ m} < \sigma_z < 6000 \text{ m}$;

(3) Growth is based on dynamical-statistical theory for $\sigma_z > 6000 \text{ m}$; eddy diffusivity computed from Pasquill-Gifford stability class;

(4) Growth approaches that described by Taylor's statistical theory (limit of dynamical-statistical theory for time much larger than the Lagrangian time correlation) for $\sigma_z > 10000 \text{ m}$.

k. Vertical Dispersion

Plume half-depth (σ_z) growth is based on combination of Brookhaven curves for elevated plumes and Turner curves for near-ground plumes.

Vertical plume structure is Gaussian, with superimposed reflection terms, until σ_z becomes sufficiently large that a vertically uniform plume assumption is appropriate.

Maximum depth of a plume is 2000 m.

l. Chemical Transformation

SO_2 oxidation to SO_4 is treated using a first-order chemical reaction rate constant which is parameterized to vary hourly following diurnal and seasonal cycles.

m. Physical Removal

Dry deposition is computed using the source depletion equation. Dry deposition velocities vary according to the stability of the surface layer.

n. Evaluation Studies

Muller, S.F. and L.W. Reisinger, 1986. Evaluation of the Air Resources Regional Pollution Assessment (ARRPA) Model. (Report in Progress).

B.3 APRAC-3

Reference

Simmon, P. B., R. M. Patterson, F. L. Ludwig, and L. B. Jones, 1981. The APRAC-3/ Mobile 1 Emissions and Diffusion Modeling Package. EPA Publication No. EPA 909-9-81-002. U.S. Environmental Protection Agency, Region IX, San Francisco, CA. (NTIS No. PB82-103763).

Availability

This model is available as part of UNAMAP (Version 8). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22181, phone (703) 487-4650.

Abstract

APRAC-3 is a model which computes hourly average carbon monoxide concentrations for any urban location. The model calculates contributions from dispersion on various scales: Extraurban, mainly from sources upwind of the city of interest; intraurban, from freeway, arterial, and feeder street sources; and local, from dispersion within a street canyon. APRAC-3 requires an extensive traffic inventory for the city of interest. APRAC-3, as it exists on UNAMAP (Version 8), has been updated with Mobile 2 emission factors.

a. Recommendations for Regulatory Use

APRAC-3 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. APRAC-3 must be executed in the equivalent mode.

APRAC-3 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated using the criteria in section 3.2, that APRAC-3 is more appropriate for the specific application. In this case the model options/mode which are most appropriate for the application should be used.

Although the user's manual for APRAC-3 contains Mobile 1 emission factors, it is recommended that those emission factors be updated with the latest version of Mobile (Mobile Source Emissions Model) for use in regulatory applications.

b. Input Requirements

Source data requirements are: line source (traffic link) end points, road type and daily traffic volume.

Meteorological data requirements are: hourly wind direction (nearest 10 degrees), hourly wind speed, and hourly cloud cover for stability calculations.

Receptor data requirements are: coordinates for up to 10 receptors for any single day and up to 8 receptors for the intersection submodel.

c. Output

Printed output includes:
Hourly calculations at each receptor.

d. Type of Model

APRAC-3 is a Gaussian plume model.

e. Pollutant Types

APRAC-3 may be used to model primary pollutants.

f. Source-Receptor Relationship

Traffic links may have arbitrary length and orientation. Off-link traffic is allocated to two-mile square grids. Link traffic emissions are aggregated into a receptor oriented area source array.

The boundaries of the area sources actually treated are (1) arcs at radial distances from the receptor which increase in geometric progression, (2) the sides of a 22.5° sector oriented upwind for distances greater than 1000 m, and (3) the sides of a 45° sector oriented upwind for distances less than 1000 m.

A similar area source array is established for each receptor.

Sources are assumed to be at ground level.

Up to 10 receptors are accepted for any single day.

Up to 625 receptors are accepted for a single-hour.

Up to 8 receptors are accepted for the intersection submodel.

Receptors are at ground level.

Receptor locations are arbitrary.

Four internally defined receptor locations on each user-designated street are used in a special street canyon sub-model.

A box model is used to estimate contribution from upwind sources beyond 32 km based on wind speed, mixing height, annual fuel consumption.

In street canyon sub-model, contribution from other streets is included in background.

g. Plume Behavior

Plume rise is not treated.

Fumigation and downwash are not treated except in street canyon sub-model.

In street canyon sub-model, a helical circulation pattern is assumed.

h. Horizontal Winds

User input hourly wind speed and direction in tens of degrees are used.

No variation of wind speed or direction with height is assumed.

Constant, uniform (steady-state) wind is assumed within each hour.

The model can interpolate winds at receptors if more than one wind is provided.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero except in street canyon sub-model.

Helical circulation assumed by street canyon sub-model.

j. Horizontal Dispersion

Sector averaging is used with uniform distribution within sectors. Sector size is 22.5 degrees beyond 1 km and 45.0 degrees within 1 km.

k. Vertical Dispersion

Six stability classes are used. Stability class is determined internally from user-supplied meteorological data modified from Turner (1964).

Dispersion coefficients are adapted from McElroy and Pooler (1968).

No adjustments are made for variations in surface roughness.

Downwind distance variation of σ_z is assumed to be ax^b for purposes of doing analytical integration.

In street canyon sub-model, an empirical function of wind speed and street width and direction is used.

Perfect reflection at the surface is assumed.

Mixing height is ignored until concentration equals that calculated using box model. A box model (uniform vertical distribution) is used beyond that distance.

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Ludwig, F. L. and W. F. Dabberdt, 1972. Evaluation of the APRAC-IA Urban Dispersion Model for Carbon Dioxide, SRI Project 8563. Stanford Research Institute, Menlo Park, CA.

B.4 COMPTER

Reference

State of Alabama, 1980. COMPTER Model Users Guide. Alabama Department of Environmental Management, Air Division, Montgomery, AL.

Availability

This model is available to users for tape and reproduction charges. If a tape is sent, the reproduction is free. Send tape and desired format and specifications to: Mr. Richard E. Grusnick, Chief, Air Division, Alabama Department of Environmental

Management, 1751 Federal Drive,
Montgomery, Alabama 36109.

Abstract

COMPTER is based on the Gaussian steady-state technique applicable to both urban and rural areas. The model contains the following attributes: (a) Determines maximum 24-hour, 3-hour, 1-hour and variable hour concentrations for both block and running averages; (b) elevated terrain considered with the standard plume-chopping technique or stability dependent plume path trajectory; (c) uses annual hourly meteorological data in the CRSTER preprocessor format; (d) uses Pasquill-Gifford stability curves; (e) allows for stability class substitution in the stable categories. Typical model use is in rural areas with moderate to low terrain features.

a. Recommendations for Regulatory Use

COMPTER can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. COMPTER must be executed in the equivalent mode.

COMPTER can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that COMPTER is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: annual or hourly values of emission rate, exit velocity, stack gas temperature, stack height, and stack diameter.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is optional.

Receptor data requirements are: individual receptor coordinates; or a location and distance from the center of five rings of receptors; or a combination of individual receptors and either the rectangular grid or the rings of receptors. Elevations of all receptors may be input.

c. Output

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1, 3 and 24-hours, a user-selected averaging time which may be 2-12 hours (variable hourly), and a 50 high table for 1, 3, variable hourly, and 24-hours;

Annual arithmetic average at each receptor; and the highest 1-hour and 24-hour concentrations over the receptor field for each day considered.

Computer readable output includes:

Hourly, 3-hourly, variable hourly, and 24-hour concentrations for each receptor on magnetic storage device.

d. Type of Model

COMPTER is a Gaussian plume model.

e. Pollutant Types

COMPTER may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

A maximum 50 sources and 200 receptors are treated.

COMPTER applies user-specified locations of sources and receptors.

User input stack height and source characteristics for each source are applied.

User input topographic elevation for each receptor is applied.

Receptors are assumed to be at ground level.

g. Plume Behavior

Briggs' (1969, 1971, 1972) plume rise equations with limited mixing are used.

Plume height is adjustable according to stability with use of plume path coefficient.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Power law wind profile exponents used are .10, .15, .20, .25, .30, .30, for stability classes A through F, respectively. Anemometer height is assumed to be 10 meters.

i. Vertical Wind Speed

Vertical wind speeds are assumed equal to zero.

j. Horizontal Dispersion

Dispersion coefficients are from Turner (1969), with no further adjustments made for variations in surface roughness or averaging time.

Optionally, stability class 7 may be treated as Class 6.

Other options for stable class substitution include changing stabilities F and G to E, and reducing E, F, and G to D, E, and F, respectively.

k. Vertical Dispersion

Dispersion coefficients are from Turner (1969), with no further adjustments made for variations in surface roughness.

Optionally, by source, buoyancy induced dispersion ($\Delta H^2/10$) is included.

Optionally, stability class 7 may be treated as class 6.

Other options for stable class substitution include changing stabilities F and G to E; and reducing E, F, and G to D, E, and F, respectively.

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Londregan, R., D. Minott, D. Wackter, T. Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA-450/4-83-003. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.5 ERT Air Quality Model (ERTAQ)

Reference

Environmental Research & Technology, Inc., 1980. ERTAQ User's Guide. ERT Document No. M-0186-001E. Environmental Research & Technology, Inc., Concord, MA.

Availability

The above report and a computer tape are available from: Computer Products, National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal Road, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

ERTAQ is a multiple point, line and area source dispersion model which utilizes the univariate Gaussian formula with multiple reflections. With the fugitive dust option, entrainment of particulates from ground-level sources and subsequent deposition are accountable. The model offers an urban/rural option, and calculates long-term or worst-case concentrations due to arbitrarily located sources for arbitrarily located receptors above or at ground level. Background concentrations and calibration factors at each receptor can be user specified. Unique flexibility is afforded by postprocessing storage and manipulation capability.

a. Recommendations for Regulatory Use

ERTAQ can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. ERTAQ must be executed in the equivalent mode.

ERTAQ can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that ERTAQ is more appropriate for the specific application in this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Up to six pollutants may be specified, citing quantity and calibration factor for each (and particle size, if appropriate); heat rate and height of emissions per source for determining plume height.

Meteorological data requirements are: Stability wind rose, plus annual average ambient air temperature and mixing height.

Receptor data requirements are: Cartesian coordinates for each receptor.

c. Output

Printed output includes: Mean concentrations at designated receptors for long-term mode. In worst-case mode, concentrations for user-specified meteorological conditions.

d. Type of Model

ERTAQ is a climatological Gaussian plume model.

e. Pollutant Types

ERTAQ treats primary pollutants with or without significant settling velocities.

f. Source-Receptor Relationship

Up to 501 user-specified locations for point, area, and line sources, and up to 128 arbitrarily located receptors are permitted.

User-specified release heights are applied for all sources.

Simple terrain relief is treated.

Receptors may be at or above ground level.

g. Plume Behavior

Briggs (1975) final plume rise only is used. Briggs calm formula is used when wind speed is less than 1.37 meters per second.

Plume rise may be calculated for point and area sources.

Top or mixed layer is perfect reflector (full or no plume penetration).

Fumigation and downwash are not treated.

Buoyancy-induced dispersion is not treated.

h. Horizontal Winds

Steady state and homogeneous winds are assumed.

Sixteen wind directions and six speed classes are treated.

Exponential vertical profile extrapolates observed wind to release height for plume rise and to plume height for downwind dilution.

The exponents used are .10, .15, .20, .25, and .30 for stability classes A through E, respectively.

i. Vertical Wind Speed

Vertical wind speed is assumed to be zero.

j. Horizontal Dispersion

Uniform distribution in 22.5 degree sector, or triangular distribution in 45-degree sector (user specified).

k. Vertical Dispersion

Gaussian plume with initial mixing specification is assumed.

Five stability categories are treated (converts all stability class F to class E).

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for surface roughness.

Urban case is treated by shifting each stability category (except class A) one class toward unstable.

Top of mixed layer is perfect reflector (full or no plume penetration).

Ground surface is total reflector.

Surface deposition reduces entire plume concentration using a source depletion factor.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Particle deposition for ground-level sources is treated.

n. Evaluation Studies

Lonergan, R.J., D.H. Minott, D.J. Wackter and R.R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models. EPA Publication No. EPA-450/4-83-020. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.6 ERT Visibility Model**Reference**

Drivas, P.J., Savithri M., and D.W. Heinold, 1980. ERT Visibility Model: Version 3; Technical Description and User's Guide. Document M2020-001. Environmental Research & Technology, Inc., Concord, MA.

Availability

The above report and a computer tape are available from: Computer Products, National Technical Information Service, U. S. Department of Commerce, 5825 Port Royal Road, Springfield, Virginia 22181, phone (703) 487-4650.

Abstract

The ERT Visibility model is a Gaussian dispersion model designed to estimate visibility impairment for arbitrary lines of sight due to isolated point source emissions by simulating gas-to-particle conversion, dry deposition, NO to NO₂ conversion and linear radiative transfer.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The ERT Visibility model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: stack height, stack temperature, emissions of SO₂, NO_x, TSP, fraction of NO_x as NO₂, fraction of TSP which are carbonaceous, exit velocity, and exit radius.

Meteorological data requirements are: Hourly ambient temperature, mixing depth, wind speed at stack height, stability class, potential temperature gradient, and wind direction.

Receptor data requirements are: Observer coordinates with respect to source, latitude, longitude, time zone, date, time of day, elevation, relative humidity, background visual range, line-of-sight azimuth and elevation angle, inclination angle of the observed object, distance from observer to object, object reflectivity, surface reflectivity, number and spacing of integral receptor points along line-of-sight.

Other data requirements are: Ambient concentrations of O₃ and NO_x, deposition velocity of TSP, sulfate, nitrate, SO₂ and NO_x, first-order transformation rate for sulfate and nitrate.

c. Output

Printed output includes both summary and detailed results as follows: Summary output: Page 1—site, observer and object parameters; page 2—optical pollutants and associated extinction coefficients; page 3—plume model input parameters; page 4—total calculated visual range reduction, and each pollutant's contribution; page 5—calculated plume contrast, object contrast and object contrast degradation at the 550 nm wavelength; page 6—calculated blue/red ratio and ΔE (U'V'W') value for both sky and object discoloration.

Detailed output: Phase functions for each pollutant in four wavelengths (400, 450, 550, 650 nm), concentrations for each pollutant along sight path, solar geometry, contrast parameters at all wavelengths, intensities, tristimulus values and chromaticity

coordinates for views of the object, sun, background sky and plume.

d. Type of Model

ERT Visibility model is a Gaussian plume model for estimating visibility impairment.

e. Pollutant Types

Optical activity of sulfate, nitrate (derived from SO₂ and NO_x emissions), primary TSP and NO₂ is simulated.

f. Source Receptor Relationship

Single source and hour is simulated. Unlimited number of lines-of-sight (receptors) is permitted per model run.

g. Plume Behavior

Briggs (1971) plume rise equations for final rise are used.

h. Horizontal Wind Field

A single wind speed and direction is specified for each case study. The wind is assumed to be spatially uniform.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used. Mixing height is accounted for with multiple reflection handled by summation of series near the source, and Fourier representation farther downwind.

l. Chemical Transformation

First order transformations of sulfates and nitrates are used.

m. Physical Removal

Dry deposition is treated by the source depletion method.

n. Evaluation Studies

Seigneur, C., R.W. Bergstrom, and A.B.

Hudishevskyj, 1982. Evaluation of the EPA PLUVUE Model and the ERT Visibility Model Based on the 1979 VISTIA Data Base, EPA Publication No. EPA-450/4-82-008, U. S. Environmental Protection Agency, Research Triangle Park, NC.

White, W.H., C. Seigneur, D.W. Heinold, M.W. Eltgroth, L.W. Richards, P.T. Roberts, P.S. Bhardwaja, W.D. Conner and W.E.

Wilson, Jr., 1985. Predicting the Visibility of Chimney Plumes: An Intercomparison of Four Models with Observations at a Well-Controlled Power Plant. Atmospheric Environment, 19:515-528.

B.7 HIWAY-2**Reference**

Petersen, W.B., 1980. User's Guide for HIWAY-2. EPA Publication No. EPA-600/8-80-018, U.S. Environmental Protection Agency, ESRL, Research Triangle Park, NC (NTIS PB 80-227-556).

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer

Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

HIWAY-2 can be used to estimate the concentrations of non-reactive pollutants from highway traffic. This steady-state Gaussian model can be applied to determine air pollution concentrations at receptor locations downwind of "at-grade" and "cut section" highways located in relatively uncomplicated terrain. The model is applicable for any wind direction, highway orientation, and receptor location. The model was developed for situations where horizontal wind flow dominates. The model cannot consider complex terrain or large obstructions to the flow such as buildings or large trees.

a. Recommendations for Regulatory Use

HIWAY-2 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. HIWAY-2 must be executed in the equivalent mode.

HIWAY-2 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in Section 3.2, that HIWAY-2 is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: A uniform emission rate by lane, roadway end points; height of emission; length, width, and number of lanes; and width of center strip.

Meteorological data requirements are: One set at a time of hourly averages of wind speed, wind direction, and mixing height and the Pasquill-Gifford stability class. Wind speed and direction are preferred to be at 2 meters above ground.

Receptor data requirements are: Coordinates of each receptor.

c. Output

Printed output includes: One hourly average concentration at each specified receptor location.

d. Type of Model

HIWAY-2 is a Gaussian plume model.

e. Pollutant Types

HIWAY-2 may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

HIWAY-2 applies user-specified end points for a single roadway segment, and user-specified receptor locations.

Plume impact on receptor is calculated by finite difference integration of a point source along each lane of the roadway.

g. Plume Behavior

HIWAY-2 does not treat plume rise.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

An aerodynamic drag factor is applied when winds are parallel to the roadway and speeds are less than 2 m/sec.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

The total horizontal dispersion is that due to ambient turbulence plus the turbulence generated by the vehicles on the roadway.

Beyond 300 m downwind total turbulence is considered to be dominated by atmospheric turbulence, with plume dispersion as described by Turner (1969).

Three stability classes are considered: Unstable, neutral and stable.

k. Vertical Dispersion

The total horizontal dispersion is that due to ambient turbulence plus the turbulence generated by the vehicles on the roadway.

Beyond 300 m downwind total turbulence is considered to be dominated by atmospheric turbulence, with plume dispersion as described by Turner (1969).

Mixing height is accounted for with multiple reflections until the vertical plume size equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Three stability classes are considered: Unstable, neutral and stable.

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Rao, S.T., and J.A. Visalli, 1981. On the Comparative Assessment of the Performance of Air Quality Models, Journal of Air Pollution Control Association, 31:851-860.

B.8 Integrated Model for Plumes and Atmospheric Chemistry in Complex Terrain (IMPACT)

Reference

Fabrick, Allan J. and Peter J. Haas, 1980. User Guide to IMPACT: An Integrated Model for Plumes and Atmospheric Chemistry in Complex Terrain. DCN 80-241-403-01. Radian Corporation, 8501 Mo-Pac Blvd., Austin, TX.

Availability

A magnetic tape containing the IMPACT model, a set of test data and a copy of the IMPACT User's Guide are available for a cost of \$500 from: Howard Balentine, Senior Meteorologist, Radian Corporation, Post Office Box 9948, Austin, Texas 78766.

Abstract

IMPACT is an Eulerian, three-dimensional, finite difference grid model designed to calculate the impact of pollutants, either inert or reactive, in simple or complex terrain, emitted from either point or area sources. It automatically treats single or multiple point or area sources, the effects of vertical temperature stratifications on the wind and diffusion fields, shear flows caused by the atmospheric boundary layer or by terrain effects, and chemical transformations.

a. Recommendations for Regulatory Use

IMPACT can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. IMPACT must be executed in the equivalent mode.

IMPACT can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that IMPACT is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

There is no specific recommendation concerning the use of IMPACT for photochemical applications. IMPACT may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: for point sources—location (I, J), stack height, exit temperature, volume flow rate or stack diameter and exit velocity, hourly emission rates for all pollutants; for area sources location of corners, and hourly emission rates for each pollutant.

Meteorological data requirements are: Hourly wind speed and direction, surface and elevated, from meteorological stations within and surrounding the modeling area, temperature, pressure, humidity and insolation (the three last variables are optional).

Receptor data requirements are: None since concentrations are output for cells in the computational grid.

Air quality data (optional): One or more vertical concentration profiles for each pollutant.

Other data: 2-D array of terrain heights, 2-D array of surface roughness values (optional).

c. Output

Printed output options include: Surface and elevated horizontal cross sections of pollutant concentrations (instantaneous, or averages over N hours where N=1, 2, 3, . . .); Horizontal cross sections of diffusivities and wind velocities; and Arbitrary vertical and horizontal cross sections of pollutant concentrations and diffusivities, and CALCOMP wind field vector plots are generated by the POST post-processor program.

Computer readable output includes: Concentration, wind field and diffusivity data for each hour.

d. Type of Model

IMPACT is an Eulerian finite difference model.

e. Pollutant Types

IMPACT may be used to model any inert pollutant.

IMPACT may be used to model SO₂, SO₄²⁻, NO_x, NO₂, O₃, hydrocarbons (depends upon chemistry mechanism selected).

f. Source-Receptor Relationship

Up to 20 point sources and 20 area sources may be treated (greater number of sources may be treated by increasing common block storage allocation).

Concentrations are calculated at the center of each cell in the grid.

g. Plume Behavior

Briggs (1975) formulation for plume rise is used.

Elevated inversions are considered.

h. Horizontal Winds

A three dimensional stability and terrain dependent nondivergent wind field is interpolated from single or multiple wind data measurements using a Poisson technique.

i. Vertical Wind Speed

Vertical wind speed is treated at each wind site, user specified or extrapolated from surface data. Interpolated is accomplished as part of the three dimensional wind field interpolation.

j. Horizontal Dispersion

A three dimensional diffusivity field is calculated using either the technique of Myrup/Ranzieri or the DEPICT method (see User Guide, Fabrick and Haas, 1980).

k. Vertical Dispersion

A three dimensional diffusivity field is calculated using either the technique of Myrup/Ranzieri or the DEPICT method (see User Guide, Fabrick and Haas, 1980).

l. Chemical Transformation

Either 3, 6, 8 or 15-species mechanisms are currently available (see User Guide). Calculations are also performed for inert pollutants.

m. Physical Removal

Physical removal is treated using exponential decay. Half-life is input by the user.

n. Evaluation Studies

Fabrick, A.J., R. Sklarew, and J. Wilson, 1977. Point Source Model Evaluation and Development Study. Report prepared for the California Air Resources Board.

Fabrick, A.J., and P.J. Haas, 1980. Analysis of Dispersion Models used for Complex Terrain Simulation. Presented at the Symposium on Intermediate Range Transport Processes and Technology Assessment, Gatlinburg, TN.

Sklarew, R., and V. Mirabella, 1979. Experience in IMPACT Modeling of Complex Terrain Fourth Symposium on Turbulence, Diffusion and Air Pollution, Reno, NV.

Sklarew, R., J. Wilson, A.J. Fabrick and V. Mirabella, 1976. "Rough Terrain Modeling." Presented at Geothermal Environmental Seminar '76, Clear Lake, CA.

Sklarew, R., and K. Tran, 1978. "The NEWEST Wind Field Model with Applications to Thermally Driven Drainage Wind in Mountainous Terrain." Presented at the AMS Meeting, Lake Tahoe, NV.

Wackter, D., and R. Londergan, 1984. Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA-450/4-84-017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.9 LONGZ**Reference**

Bjorklund, J.R., and J.F. Bowers, 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs, Volumes I and II. EPA Publication No. EPA 903/9-82-004. U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

Availability

The model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

LONGZ utilizes the steady-state univariate Gaussian plume formulation for both urban and rural areas in flat or complex terrain to calculate long-term (seasonal and/or annual) ground-level ambient air concentrations attributable to emissions from up to 14,000 arbitrarily placed sources (stacks, buildings and area sources). The output consists of the total concentration at each receptor due to emissions from each user-specified source or group of sources, including all sources. An option which considers losses due to deposition (see the description of SHORTZ) is deemed inappropriate by the authors for complex terrain, and is not discussed here.

a. Recommendations for Regulatory Use

LONGZ can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. LONGZ must be executed in the equivalent mode.

LONGZ can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that LONGZ is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: For point, building or area sources, location, elevation, total emission rate (optionally classified by gravitational settling velocity) and decay coefficient; for stack sources, stack height, effluent temperature, effluent exit velocity, stack radius (inner), emission rate, and ground elevation (optional); for building sources, height, length and width, and orientation; for area sources, characteristic vertical dimension, and length, width and orientation.

Meteorological data requirements are: Wind speed and measurement height, wind profile exponents, wind direction standard deviations (turbulent intensities), mixing height, air temperature, vertical potential temperature gradient.

Receptor data requirements are: Coordinates, ground elevation.

c. Output

Printed output includes: Total concentration due to emissions from user-specified source groups, including the combined emissions from all sources (with optional allowance for depletion by deposition).

d. Type of Model

LONGZ is a climatological Gaussian plume model.

e. Pollutant Types

LONGZ may be used to model primary pollutants. Settling and deposition are treated.

f. Source-Receptor Relationships

LONGZ applies user specified locations for sources and receptors.

Receptors are assumed to be at ground level.

g. Plume Behavior

Plume rise equations of Bjorklund and Bowers (1982) are used.

Stack tip downwash (Bjorklund and Bowers, 1982) is included.

All plumes move horizontally and will fully intercept elevated terrain.

Plumes above mixing height are ignored.

Perfect reflection at mixing height is assumed for plumes below the mixing height.

Plume rise is limited when the mean wind at stack height approaches or exceeds stack exit velocity.

Perfect reflection at ground is assumed for pollutants with no settling velocity.

Zero reflection at ground is assumed for pollutants with finite settling velocity.

LONGZ does not simulate fumigation.

Tilted plume is used for pollutants with settling velocity specified.

Buoyancy-induced dispersion is treated (Briggs, 1972).

h. Horizontal Winds

Wind field is homogeneous and steady-state.

Wind speed profile exponents are functions of both stability class and wind speed. Default values are specified in Bjorklund and Bowers (1982).

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Pollutants are initially uniformly distributed within each wind direction sector. A smoothing function is then used to remove discontinuities at sector boundaries.

k. Vertical Dispersion

Vertical dispersion is derived from input vertical turbulent intensities using adjustments to plume height and rate of plume growth with downwind distance specified in Bjorklund and Bowers (1982).

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. Physical Removal

Gravitational settling and dry deposition of particulates are treated.

n. Evaluation Studies

Bjorklund, J.R., and J.F. Bowers, 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs, Volume I and II. EPA Publication No. EPA-903/9-82-004, U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

B.10 Maryland Power Plant Siting Program (PPSP) Model

References

Brower, R., 1982. The Maryland Power Plant Siting Program (PPSP) Air Quality Model User's Guide. Ref. No. PPSP-MP-38. Prepared for Maryland Department of Natural Resources, by Environmental Center, Martin Marietta Corporation, Baltimore, MD. (NTIS No. PB82-238387).

Weil, J.C. and R.P. Brower, 1982. The Maryland PPSP Dispersion Model for Tall Stacks. Ref. No. PPSP-MP-36. Prepared for Maryland Department of Natural Resources, by Environmental Center, Martin Marietta Corporation, Baltimore, MD. (NTIS No. PB82-219155).

Availability

Two reports referenced above are available from NTIS. The model code and test data are available on magnetic tape for a cost of \$210 from: Power Plant Siting Program, Department of Natural Resources, Tawes State Office Building, Annapolis, Maryland 21401, attn: Dr. Michael Hirshfield.

Abstract

PPSP is a Gaussian dispersion model applicable to tall stacks in either rural areas, but in terrain that is essentially flat (on a scale large compared to the ground roughness elements). The PPSP model follows the same general formulation and computer coding as CRSTER, also a Gaussian model, but it differs in four major ways. The differences are in the scientific formulation of specific ingredients or "sub-models" to the Gaussian model, and are based on recent theoretical improvements as well as supporting experimental data. The differences are: (1) Stability during daytime is based on convective scaling instead of the Turner criteria; (2) Briggs' dispersion curves for elevated sources are used; (3) Briggs plume rise formulas for convective conditions are included; and (4) plume penetration of elevated stable layers is given by Briggs' (1984) model.

a. Recommendations for Regulatory Use

PPSP can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. PPSP must be executed in the equivalent mode.

PPSP can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that PPSP is more appropriate for the scientific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Emission rate (monthly rates optional), physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required. Wind speed profile exponents (one for each stability class) are required if on-site data are input.

Receptor data requirements are: distance of each of the five receptor rings.

c. Output

Printed output includes: Highest and second highest concentrations for the year at each receptor for averaging times of 1, 3, and 24 hours, plus a user-selected averaging time which may be 2, 4, 6, 8, or 12 hours;

Annual arithmetic average at each receptor; and

For each day, the highest 1-hour and 24-hour concentrations over the receptor field.

d. Type of Model

PPSP is a Gaussian plume model.

e. Pollutant Types

PPSP may be used to model primary pollutants. Setting and deposition are not treated.

f. Source-Receptor Relationship

Up to 19 point sources are treated.

All point sources are assumed at the same location.

Unique stack height and stack exit conditions are applied for each source.

Receptor locations are restricted to 36 azimuths (every 10 degrees) and five user-specified radial distances.

g. Plume Behavior

Briggs (1975) final rise formulas for buoyant plumes are used. Momentum rise is not considered.

Transitional or distance-dependent plume rise is not modeled.

Penetration (complete, partial, or zero) of elevated inversions is treated with Briggs (1984) model; ground-level concentrations are dependent on degree of plume penetration.

h. Horizontal Winds

Wind speeds are corrected for release height based on power law variation, with different exponents for different stability classes and variable reference height (7 meters is default). Wind speed power law exponents are .10, .15, .20, .25, .30, and .30 for stability classes A through F, respectively.

Constant, uniform (steady-state) wind assumed within each hour.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion parameters are Briggs (Gifford, 1975), with stability class defined by u/w* during daytime, and by the method of Turner (1964) at night.

Urban dispersion is treated by changing all stable cases to stability class D.

Buoyancy-induced dispersion (Pasquill, 1976) is included (using $\Delta H / 3.5$).

k. Vertical Dispersion

Rural dispersion parameters are Briggs (Gifford, 1975), with stability class defined by u/w* during daytime, and by the method of Turner (1964).

Urban dispersion is treated by changing all stable cases to stability class D.

Buoyancy-induced dispersion (Pasquill, 1976) is included (using $\Delta H / 3.5$).

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Weil, J.C. and R.P. Brower, 1982. The Maryland PPSP dispersion model for tall stacks. Ref. No. PPSP MP-36. Prepared for Maryland Department of Natural Resources. Prepared by Environmental Center, Martin Marietta Corporation, Baltimore, Maryland (NTIS No. PB 82-2199155).

Londergan, R., D. Minott, D. Wackter, T. Kincaid, and D. Bonitata, 1983.

Evaluation of Rural Air Quality Simulation Models, Appendix G: Statistical Tables for PPSP. EPA Publication No. EPA 450/4-83-003, Environmental Protection Agency, Research Triangle Park, NC.

B11 MESOSCALE PUFF MODEL (MESOPUFF II)**Reference**

Scire, J.S., F.W. Lurmann, A. Bass, S.R. Hanna, 1984. User's Guide to the Mesopuff II Model and Related Processor Programs. EPA Publication No. EPA 600/8-84-013. U.S. Environmental Protection Agency, Research Triangle Park, NC NTIS PB 84-181775.

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, phone (703) 487-4650.

Abstract

MESOPUFF II is a short term, regional scale puff model designed to calculate concentrations of up to 5 pollutant species (SO_2 , SO_4 , NO_x , HNO_3 , NO_3). Transport, puff growth, chemical transformation, and wet and dry deposition are accounted for in the model.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The model may be used on a case-by-case basis.

b. Input Requirements

Required input data include four types: (1) Input control parameters and selected technical options, (2) hourly surface meteorological data and twice daily upper air measurements, hourly precipitation data are optional, (3) surface land use classification information, (4) source and emissions data.

Data from up to 25 surface National Weather Service stations and up to 10 upper air stations may be considered. Spatially variable fields at hour intervals of winds, mixing height, stability class, and relevant turbulence parameters are derived by MESOPAC II, the meteorological preprocessor program described in the User Guide.

Source and emission data for up to 25 point sources and/or up to 5 area sources can be included. Required information are: Location is grid coordinates, stack height, exit velocity and temperature, and emission rates for the pollutant to be modeled.

Receptor data requirements: Up to a 40 x 40 grid may be used and non-gridded receptor locations may be considered.

c. Output

Line printer output includes: All input parameters, optionally selected arrays of ground-level concentrations of pollutant species at specified time intervals.

Liner printer contour plots output from MESOFIL II post-processor program.

Computer readable output of concentration array to disk/tape for each hour.

d. Type of Model

MESOPUFF II is a Gaussian puff superposition model.

e. Pollutant types modeled

Up to five pollutant species may be modeled simultaneously and include: SO₂, SO₄, NO_x, HNO₃, NO₃.

f. Source-Receptor Relationship

Up to 25 point sources and/or up to 5 area sources are permitted.

g. Plume behavior

Briggs (1975) plume rise equations are used, including plume penetration with buoyancy flux computed in the model.

Fumigation of puffs is considered and may produce immediate mixing or multiple reflection calculations at user option.

h. Horizontal Winds

Gridded wind fields are computed for 2 layers; boundary layer and above the mixed layer. Upper air rawinsonde data and hourly surface winds are used to obtain spatially variable u,v component fields at hourly intervals. The gridded fields are computed by interpolation between stations in the MESOPAC II preprocessor.

i. Vertical Wind Speed

Vertical winds are assumed to be zero.

j. Horizontal Dispersion

Incremental puff growth is computed over discrete time steps with horizontal growth parameters determined from power law equations fit to sigma y curves of Turner out to 100 km. At distances greater than 100 km, puff growth is determined by the rate given by Heffter (1965).

Puff growth is a function of stability class and changes in stability are treated. Optionally, user input plume growth coefficients may be considered.

k. Vertical Dispersion

For puffs emitted at an effective stack height which is less than the mixing height,

uniform mixing of the pollutant within the mixed layer is performed. For puffs centered above the mixing height, no effect at the ground occurs.

l. Chemical Transformation

Hourly chemical rate constants are computed from empirical expressions derived from photochemical model simulations.

m. Physical Removal

Dry deposition is treated with a resistance method.

Wet removal may be considered if hourly precipitation data are input.

n. Evaluation Studies

Results of tests for some model parameters are discussed in: Scire, J.S., F.W.

Lurmann, A. Bass, S.R. Hanna, 1984.

Development of the MESOPUFF II

Dispersion Model. EPA Publication No.

EPA 600/3-84-057, U.S. Environmental

Protection Agency, Research Triangle

Park, NC.

B.12 MESOSCALE TRANSPORT DIFFUSION AND DEPOSITION MODEL FOR INDUSTRIAL SOURCES (MTDDIS)

Reference

Wang, I.T. and T.L. Waldron, 1980. User's Guide for MTDDIS Mesoscale Transport, Diffusion, and Deposition Model for Industrial Sources. EMSC6062.1UR(R2). Combustion Engineering, Newbury Park, CA.

Availability

A magnetic tape copy of the FORTRAN coding and the user's guide are available for a cost of \$100 from: Dr. I.T. Wang, Combustion Engineering, Environmental Monitoring and Services, Inc., 2421 West Hillcrest Drive, Newbury Park, California 91320.

Abstract

MTDDIS is a variable-trajectory Gaussian puff model applicable to long-range transport of point source emissions over level or rolling terrain. It can be used to determine 3-hour maximum and 24-hour average concentrations of relatively nonreactive pollutants from up to 10 separate stacks.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The MTDDIS Model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature, and location.

Meteorological data requirements are: Hourly surface weather data, from up to 10 stations, including cloud ceiling, wind direction, wind speed, temperature, opaque cloud cover and precipitation. For long-range applications, user-analyzed daily mixing heights are recommended. If these are not available, the NWS daily mixing heights will be used by the program. A single upper air sounding station for the region is assumed. For each model run, air trajectories are generated for a 48-hour period, and therefore, the afternoon mixing height of the day before

and the mixing heights of the day after are also required by the model as input, in order to generate hourly mixing heights for the modeled period.

Receptor data requirements are: Up to three user-specified rectangular grids.

c. Output

Printed output includes:

Tabulations of hourly meteorological parameters include both input surface observations and calculated hourly stability classes and mixing heights for each station;

Printed air trajectories for the two consecutive 24-hour periods for air parcels generated 4 hours apart starting at 0000 LST; and

3-hour maximum and 24-hour average grid concentrations over user-specified rectangular grids are output for the second 24-hour period.

d. Type of Model

MTDDIS is a Gaussian puff model.

e. Pollutant Types

MTDDIS can be used to model primary pollutants. Dry deposition is treated.

Exponential decay can account for some reactions.

f. Source-Receptor Relationship

MTDDIS treats up to 10 point sources.

Up to three rectangular receptor grids may be specified by the user.

g. Plume Behavior

Briggs (1972) plume rise formulas are used.

If plume height exceeds mixing height, ground level concentration is assumed zero.

Fumigation and downwash are not treated.

h. Horizontal Winds

Wind speeds and wind directions at each station are first corrected for release height. Speed conversions are based on power law variation and direction conversions are based on linear height dependence as recommended by Irwin (1979).

Converted wind speeds and wind directions are then weighted according to the algorithms of Heffter (1980) to calculate the effective transport wind speed and direction.

i. Vertical Wind Field

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Transport-time-dependent dispersion coefficients from Heffter (1980) are used.

k. Vertical Dispersion

Transport-time-dependent dispersion coefficients from Heffter (1980) are used.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Dry deposition is treated. User input deposition velocity is required.

Wet deposition is treated. User input hourly precipitation rate and precipitation layer depth or cloud ceiling height are required.

n. Evaluation Studies

None cited.

B.13 Models 3141 and 4141*Reference*

Enviroplan, Inc., 1981. User's Manual for Enviroplan's Model 3141 and Model 4141. Enviroplan, Inc., West Orange, NJ.

Availability

A magnetic tape copy of the FORTRAN coding and the user's guide are available for a cost of \$1,900 from: Environplan, Inc., 59 Main Street, West Orange, New Jersey 07052.

Abstract

Models 3141 and 4141 are modifications of CRSTER (UNAMAP VERSION 3) and are applicable to complex terrain particularly where receptor elevation approximately equals or exceeds the stack top elevation. The model utilizes intermediate ground displacement procedures and dispersion enhancements developed from an aerial tracer study and ground level concentrations measured for a power plant located in complex terrain.

a. Recommendations for Regulatory Use

3141 or 4141 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. 3141 or 4141 must be executed in the equivalent mode.

3141 or 4141 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that 3141 or 4141 is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas exit temperature.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required. Wind speed profile exponents (one for each stability class) are required if on-site data are input.

Receptor data requirements are: Distance of each of five receptor rings, and receptor elevation.

c. Output

Printed output includes: Highest and second highest concentrations for the year at each receptor for averaging times of 1, 3, and 24-hours, plus a user-selected averaging time which may be 2, 4, 6, 8, or 12 hours.

Annual arithmetic average at each receptor.

For each day, the highest 1-hour and 24-hour concentrations over the receptor field.

d. Type of Model

3141 and 4141 are Gaussian plume models.

e. Pollutant Types

3141 and 4141 may be used to model non-reactive pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

Up to 19 point sources are treated. No area sources are treated.

All point sources are assumed to be collocated.

Unique stack height is used for each source.

Receptor locations are restricted to 36 azimuths (every 10 degrees) and 5 user-specified radial distances.

Unique topographic elevation is used for each receptor.

g. Plume Behavior

Briggs (1969, 1971, 1972) final plume rise formulas are used.

If plume height exceeds mixing height at a receptor location after terrain adjustment, concentration is assumed equal to zero.

h. Horizontal Winds

Wind speeds are corrected for release height based on power law variation exponents from DeMarrais (1959), different exponents for different stability classes, reference height = 7 meters. Exponents used are .10, .15, .20, .25, .30, and .30 for stability classes A through F, respectively.

Constant, uniform (steady-state) wind is assumed within each hour.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Dispersion coefficients are Pasquill-Gifford coefficients from Turner (1969).

Dispersion is adjusted to 60 minutes averaging time by one-fifth power rule (Gifford, 1975).

Buoyancy-induced dispersion (Briggs, 1975) is included.

k. Vertical Dispersion

Dispersion coefficients are Pasquill-Gifford coefficients from Turner (1969).

Buoyancy-induced dispersion (Brigg, 1975) is included.

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Ellis, H.M., P.C. Liu, and C. Runyon, 1979.

"Comparison of Predicted and Measured Concentrations for 54 Alternate Models of Plume Transport in Complex Terrain." Presented in APCA Annual Conference, Cincinnati, OH.

Ellis, H.M., P.C. Liu and C. Runyon, 1980.

Comparison of Predicted and Measured Concentrations for 58 Alternative Models of Plume Transport in Complex Terrain. Journal of the Air Pollution Control Association, 30(6).

Lonergan, R., D. Minott, D. Wachter, T. Kincaid and D. Bonitata. Evaluation of Rural Air Quality Simulation Models.

EPA Publication No. EPA-450/4-83-003, Environmental Protection Agency, Research Triangle Park, NC.

Wackter, D., and R. Lonergan, 1984.

Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA-450/4-84-017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.14 Multimax*Reference*

Moser, J.H., 1979. MULTIMAX: An Air Dispersion Modeling Program for Multiple Sources, Receptors, and Concentration Averages. Shell Development Company, Westhollow Research Center, P.O. Box 1380, Houston, TX. (NTIS PB 80-170178).

Availability

The above report is available from NTIS (\$16.95 for paper copy; \$5.95 on microfiche). The accession number for the computer tape for MULTIMAX is PB 80-170180, and the cost is \$370.00. Requests should be sent to: Computer Products, National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal Road, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

MULTIMAX is a Gaussian plume model applicable to both urban and rural areas. It can be used to calculate highest and second-highest concentrations, for each of several averaging times due to up to 100 sources arbitrarily located.

a. Recommendations for Regulatory Use

MULTIMAX can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. MULTIMAX must be executed in the equivalent mode.

MULTIMAX can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in Section 3.2, that MULTIMAX is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required. Wind speed profile exponents (one for each stability class) are required if on-site data are input.

Receptor requirements are: Individual receptor points, arcs and circles of receptors, or lines of receptors may be input, with receptor point locations, receptor line end

points, and receptor circle center and radius defined in either cartesian or polar coordinates.

c. Output

Printed output includes: Highest and second-highest concentrations for the year at each receptor for averaging time of 1, 3, and 24 hours. Annual arithmetic average at each receptor.

Computer readable output includes: Input data and results.

d. Type of Model

MULTIMAX is a Gaussian plume model.

e. Pollutant Types

MULTIMAX may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

Up to 100 point sources at any location may be input.

Area sources are not treated.

Point sources may be at any location.

Unique stack height is used for each source.

Unique topographic elevation is used for each receptor; must be below top of stack.

Receptors can be defined individually, or along lines or arcs.

g. Plume Behavior

MULTIMAX uses Briggs (1969, 1971, 1972) final plume rise formulas.

If plume height exceeds mixing height, concentrations downwind are assumed equal to zero.

h. Horizontal Winds

Wind speeds are corrected for release height based on power law variation exponents from DeMarrais (1959), different exponents for different stability classes, reference height = 10 meters. The exponents are .10, .15, .20, .25, .30, and .30 for stability classes A through F, respectively.

Constant, uniform (steady-state) wind is assumed within each hour.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used in MULTIMAX with no adjustments made for variations in surface roughness.

Six stability classes are used, with Turner class 7 treated as Class 6.

Averaging time adjustment is optional.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used in MULTIMAX with no adjustments made for variations in surface roughness.

Six stability classes are used, with Turner class 7 treated as Class 6.

Perfect reflection at the ground is assumed.

Mixing height is accounted for with multiple reflections until the vertical plume size equals 1.6 times the mixing height; uniform mixing is assumed beyond that point.

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Lonergan, R., D. Minott, D. Wackter, T. Kincaid, and D. Bonilata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA-450/4-83-003, U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.15 Multiple Point Source Diffusion Model (MPSDM)

Reference

Environmental Research & Technology, Inc., 1984. User's Guide to MPSDM. ERT Document No. PB-881585. Environmental Research & Technology, Inc., Concord, MA.

Availability

The above report and a computer tape are available from: Computer Products, National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal Road, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

MPSDM is a steady-state Gaussian dispersion model designed to calculate, in sequential mode or in "case-by-case" mode, concentrations of nonreactive pollutants resulting from single or multiple source emissions. The MPSDM model may be used for sources located in flat or complex terrain, in a univariate (σ_x) or bivariate (σ_x, σ_y) mode. Sufficient flexibility is allowed in the specification of model parameters to enable the MPSDM user to duplicate results that would be obtained from many other Gaussian point-source models. A number of features are incorporated to facilitate site-specific model validation studies.

a. Recommendations for Regulatory Use

MPSDM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. MPSDM must be executed in the equivalent mode.

MPSDM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that MPSDM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Hourly or constant emission rate, stack gas temperature, exit velocity, and stack inside diameter.

Meteorological data requirements are: Hourly wind speed, wind direction, air temperature and mixing height; and vertical temperature difference or stability class. Optional meteorological parameters include solar intensity and wind speed standard deviation.

Receptor data requirements are: Northing, easting, and ground level elevation of each receptor.

Air quality data requirements are:

Observed concentrations at any monitor for any or all hours ("case-by-case" mode only)

will be compared with estimates, or (sequential mode only) will be used to determine background levels. Background is calculated as the average of those monitors more than $\pm i$ radians from the plume centerline defined in the model. Default for i is the equivalent of 60°. User input for i is optional.

c. Output

Printed output includes:

"Case-by-case" mode: Printed output includes hourly centerline, off centerline, sector averaged and observed concentrations at all monitors; downwind profiles of centerline concentrations; and a statistical summary of all cases addressed.

Sequential mode: Printed output limited to ratio of predicted maximum concentration to maximum concentration measured at each monitor. Primary output is a file output containing hourly averaged concentrations.

A post-processing program, ANALYSIS, is used to produce averages for longer periods. For a user-specified average period a ranked order of peak concentrations, the cumulative frequency of occurrence of user-specified concentration levels or a summary of hourly meteorological characteristics and concentrations contributing to levels above a user-specified value can also be obtained with the ANALYSIS post-processor.

d. Type of Model

MPSDM is a Gaussian plume model.

e. Pollutant Types

MPSDM may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

Arbitrary locations for sources and receptors are used.

Actual terrain elevations may be specified and accounted for by plume-height adjustments.

Actual separation between each source receptor pair is used.

Receptors are assumed to be at ground level.

Unique stack height is used for each source.

g. Plume Behavior

Briggs (1969, 1974, 1975) plume rise equations are used.

Partial (or total) penetration of plume into elevated inversions (Briggs, 1975) is included.

Stack tip downwash (Briggs, 1975) is treated.

Fumigation (Turner, 1969) is treated.

Convective dispersion using a probability density function model is optional (Venkatram, 1980).

h. Horizontal Winds

User-supplied hourly wind speed and direction are assumed to specify horizontally homogeneous, steady-state conditions.

Wind speeds vary with height according to user-designated profiles for each stability.

Wind direction is specifiable in whole degrees from 1° to 360°.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

ASME (Brookhaven) diffusion coefficients (ASME, 1968) are used.

Options are Pasquill-Gifford coefficients or user input horizontal plume with coefficients of the form $a x^b$, or sector average with user-input sector width.

Hourly stability (six classes—very unstable through moderately stable) is determined internally from input vertical temperature gradient and mean wind speed or stability classes.

A buoyancy-induced dispersion algorithm (Pasquill, 1976) is optional.

k. Vertical Dispersion

ASME (Brookhaven) diffusion coefficients (ASME, 1968) are used. Options are Pasquill-Gifford coefficients or user input horizontal plume with coefficients of the form $a x^b$. One model option employs a convective dispersion algorithm developed by Venkatram (1980).

Hourly stability (six classes—very unstable through moderately stable) are determined internally from input vertical temperature gradient and mean wind speed or stability classes.

A buoyancy-induced dispersion algorithm (Pasquill, 1976) is optional.

Perfect reflection at ground is assumed.

Perfect reflection is assumed at the mixing height of pollutant above or below top of mixing layer (except for partial plume penetration).

l. Chemical Transformation

Not treated.

m. Physical

Not treated.

n. Evaluation Studies

Lavery, T.F., and L.L. Schulman, 1977. The Validity of a Gaussian Plume Point Source Diffusion Model for Predicting Short-Term S02 Levels in the Vicinity of Electric Generating Plants in New York State. Joint conference on Applications of Air Pollution Meteorology, AMS/APCA, Salt Lake City, UT.

Lonergan R., D. Minott, D. Wackter, T. Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA-45014-83-003, U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.16 Multi-Source (SCSTER) Model**Reference**

Malik, M.H. and B. Baldwin, 1980. Program Documentation for Multi-Source (SCSTER) Model. Program Documentation EN7408SS. Southern Company Services, Inc., Technical Engineering Systems, 64 Perimeter Center East, Atlanta, GA.

Availability

The SCSTER model and user's manual are available at no charge to a limited number of persons through Southern Company Services. A magnetic tape must be provided by those desiring the model. Requests should be directed to: Mr. Bryan Baldwin, Research Program Supervisor, Air Quality Program, Southern Company Services, Post Office Box 2625, Birmingham, Alabama 35202.

Abstract

SCSTER is a modified version of the EPA CRSTER model. The primary distinctions of SCSTER are its capability to consider multiple sources that are not necessarily collocated, its enhanced receptor specifications, its variable plume height terrain adjustment procedures and plume distortion from directional wind shear.

a. Recommendations for Regulatory Use

SCSTER can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. SCSTER must be executed in the equivalent mode.

SCSTER can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that SCSTER is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Emission rate, stack gas exit velocity, stack gas temperature, stack exit diameter, physical stack height, elevation of stack base, and coordinates of stack location. The variable emission data can be monthly or annual averages.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is optional. Wind speed profile exponents (one for each stability class) are optional.

Receptor data requirements are: Cartesian coordinates and elevations of individual receptors; distances of receptor rings, with elevation of each receptor; receptor grid networks, with elevation of each receptor. Any combination of the three receptor input types may be used to consider up to 600 receptor locations.

c. Output

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1-, 3-, and 24-hours, a user-selected averaging time which may be 2-12 hours, and a 50 high table for 1-, 3-, and 24-hours;

Annual arithmetic average at each receptor, and the highest 1-hour and 24-hour concentrations over the receptor field for each day considered.

Optional tables of source contributions of individual point sources at up to 20 receptor locations for each averaging period;

Optional magnetic tape output in either binary or fixed block format includes:

All 1-hour concentrations.

Optional card/disk output includes for each receptor:

Receptor coordinates; receptor elevation; highest and highest, second-highest, 1-, 3-, and 24-hour concentrations; and annual average concentration.

d. Type of Model

SCSTER is a Gaussian plume model.

e. Pollutant Types

SCSTER may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

SCSTER can handle up to 60 separate stacks at varying locations and up to 600 receptors, including up to 15 receptor rings.

User input topographic elevation for each receptor is used.

g. Plume Behavior

SCSTER uses Briggs (1969, 1971, 1972) final plume rise formulas.

Transitional plume rise is optional.

SCSTER contains options to incorporate wind directional shear with a plume distortion method described in appendix A of the User's Guide.

SCSTER provides four terrain adjustments including the CRSTER full terrain height adjustment and a user-input, stability-dependent plume path coefficient adjustment for receptors above stack height.

h. Horizontal Winds

Wind speeds are corrected for release height based on power law exponents from DeMarrais (1959), different exponents for different stability classes; default reference height of 7 m. Default exponents are .10, .15, .20, .25, .30, and .30 for stability classes A through F, respectively.

Steady-state wind is assumed within a given hour.

Optional consideration of plume distortion due to user-input, stability-dependent wind-direction shear gradients.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used.

Six stability classes are used.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used.

Six stability classes are used.

An optional test for plume height above mixing height before terrain adjustment is included.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is treated using exponential decay. Half-life is input by the user.

n. Evaluation Studies

Lonergan, R., D. Minott, D. Wackter, T.

Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA 450/4-83-003, U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.17 Pacific Gas and Electric Plume5 Model Reference

User's Manual for Pacific Gas and Electric Plume5 Model, 1981. Pacific Gas and Electric, San Francisco, CA.

Availability

The User's Manual will be supplied for cost of reproduction. An IBM version of the model can be obtained on a user supplied tape free of charge from: Mr. Robert N. Swanson, Pacific Gas and Electric Company, 245 Market Street, RM 451, San Francisco, California 94106.

Abstract

PLUME5 is a steady-state Gaussian plume model applicable to both rural and urban areas in uneven terrain. Pollutant concentrations at 500 receptors from up to 10 sources with up to 15 stacks each can be calculated using up to 5 meteorological inputs. The model in its "basic" mode is similar to CRSTER and MPTER. Several options are available that allow better simulation of atmospheric conditions and improved model outputs. These options allow plume rise into or through a stable layer and crosswind spread of the plume by wind directional shear with height, initial plume expansion, mean (advection) wind speed, terrain considerations, and chemical transformation of pollutants.

Differences that exist between PLUME5 and CRSTER are in the following areas: Stability class determination, hourly mixing height schemes, hourly stable layer data, randomization of wind direction, extent of data set required for preprocessing meteorological data inputs.

a. Recommendations for Regulatory Use

PLUME5 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. PLUME5 must be executed in the equivalent mode.

PLUME5 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that PLUME5 is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Cartesian or polar coordinates of each source with stack height, diameter, gas temperature, and exit velocity for each stack.

Meteorological data requirements are: Surface data—hourly meteorological data including wind direction, wind speed, temperature, and either ceiling height and total sky cover or sigma A or Delta T depending on how stability is computed; stable layer data—either NCC data or site specific user supplied data.

Receptor data requirements are: cartesian or polar coordinates of each receptor.

c. Output

Printed output includes:

Highest and second highest concentrations for the year printed out at each receptor for averaging times of 1, 3, and 24-hours, plus a

user-selected averaging time which may be 2, 4, 6, 8, or 12 hours.

Annual arithmetic average at each receptor.

For each day, the highest 1-hour and 24-hour concentrations over the receptor field is printed.

Hourly effective stack height and effective stack height distributions.

Vertical profiles of maximum pollutant concentrations above a designated height (Z_0) for the data period processed.

Cumulative number of exceedances of 1 hour and 24-hour specified values for all receptors during the entire meteorological data period. These specified values will normally be National and State Ambient Air Quality Standards.

Computer readable output includes:

Hourly concentrations for each receptor on magnetic tape.

Computer file for input to plotting routine. The file stores the highest 1-hour (or other specified time period) concentration at each receptor for the entire meteorological data period for input into a user supplied plotting routine.

d. Type of Model

PLUME5 is a Gaussian plume model.

e. Pollutant Types

PLUME5 may be used to model primary pollutants. Chemical transformations of pollutants are treated by exponential decay and/or ozone limiting procedures.

f. Source-Receptor Relationship

Can input up to 10 separate sources with up to 15 stacks per source.

Unique stack height for each source.

Rectangular or circular receptor locations (up to 500) can be either model generated or user input.

g. Terrain Considerations

When plume rise, H , is above the stable layer top concentration estimates will only be calculated for receptors at or above the stable layer top. If the receptor is below the stable layer top, then the concentration is zero.

When plume rise falls within the stable layer, concentration estimates will be only calculated for receptors located within this region. If the receptor height is above or below the stable top, then the concentration is zero.

When plume rise falls below the stable layer and the receptor height is above the stable layer base, then the concentration is zero. If the receptor is below the stable layer base, the receptor height is redefined.

g. Plume Behavior

PLUME5 uses Briggs (1975) final plume rise formulas.

Expansion of plumes within and above a stable layer is treated.

h. Horizontal Winds

User-supplied hourly wind directions are read to nearest 1, 5, 10, and 22.5 degrees. (The 5, 10 and 22.5 degree values are randomly modified to nearest whole degree within the intervals).

PLUME5 employs the extrapolated mean wind speed at stack height when the effective stack height is equal to or less than the height

of the inversion base above ground. If the plume rises into a stable layer, a separate algorithm is used.

Constant, uniform (steady state) wind assumed within each hour.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Six stability classes are defined by either radiation index and wind speed (STAR), wind direction fluctuation, or temperature lapse rate. Nighttime stability class is based on wind direction fluctuations or temperature lapse rate and may be modified according to the method of Mitchell and Timbre (1979).

Dispersion curves are from Turner (1969).

k. Vertical Dispersion

Six stability classes are defined by either radiation index and wind speed (STAR), wind direction fluctuations, or temperature lapse rate.

Nighttime stability class is based on wind direction fluctuations or temperature lapse rate and modified according to the method of Mitchell-Timbre (1979).

Dispersion curves are from Turner (1969).

l. Chemical Transformation

Chemical transformations are treated using exponential decay and/or ozone limiting procedures.

m. Physical Removal

Physical removal is treated using exponential decay. Half-life is input by user.

n. Evaluation Studies

Londergan, R., D. Minott, D. Wackter, T. Kincaid and B. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA-450/4-83-003, U. S. Environmental Protection Agency, Research Triangle Park, NC.

Wackter, D., and R. Londergan, 1984.

Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA 450/4-84-017. U. S. Environmental Protection Agency, Research Triangle Park, NC.

B.18 PLMSTAR Air Quality Simulation Model

Reference

Lurmann, F.W., D.A. Godden, and H. Collins, 1985. User's Guide to the PLMSTAR Air Quality Simulation Model. ERT Document No. M-2206-100, Environmental Research & Technology, Inc., Newbury Park, CA.

Availability

The above report and a computer tape are available from: Computer Products, National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal Road, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

PLMSTAR is a mesoscale Lagrangian photochemical model designed to predict atmospheric concentrations of O_3 , NO_2 , HNO_3 , PAN, SO_2 , and SO_4^{2-} , from reactive

hydrocarbons, NO_x and SO_x emissions. PLMSTAR is intended to simulate the behavior of pollutants in chemically reactive plumes resulting from major point source emissions. The model's Lagrangian air parcel is subdivided into a 5 layer/9 column domain of computational cells. The approach allows for realistic simulation of the combined effects of atmospheric chemical reactions and pollutant dispersion in the horizontal and vertical directions. Other key features of the model include: the capability for generation of trajectories at any level of a three-dimensional, divergence-free wind field; the capability for calculating and utilizing the time and space varying surface deposition of pollutants; an up-to-date $\text{O}_3/\text{RHC}/\text{NO}_x/\text{SO}_x$ chemical mechanism that utilizes eight classes of reactive hydrocarbons; the capability for simultaneously handling both point and area source emissions; and the capability to simulate overwater conditions and land/water transitions.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The PLMSTAR Model may be used on a case-by-case.

b. Input Requirements

Source data requirements are: Emission rates, stack parameters, diurnal emission profiles, and RHC, NO_x , and SO_x partitioning profiles.

Meteorological data requirements are: Station location, grid geometry, surface winds, surface roughness, surface temperature, temperature profiles, mixing heights (optional), cloud cover, solar radiation, and winds aloft.

Receptor data requirements are: Receptor locations and topography.

c. Output

Printed output includes:

Computed concentrations at specified times and receptors along the trajectory.

d. Type of Model

PLMSTAR is a Lagrangian photochemical model.

e. Pollutant Types

The key chemical species included in the model are O_3 , NO , NO_2 , HNO_3 , PAN , SO_2 , SO_4^{2-} , CO , and eight classes of reactive hydrocarbons. Twenty additional intermediate species are included in the chemical mechanism.

f. Source-Receptor Relationships

Source-receptor relationships for individual sources are calculated using a differencing technique. That is, simulations are made with and without an individual source (or group of collocated sources) in addition to the RHC/ NO_x/SO_x emissions from all other sources in the region. The emission processors allow for up to 250 point sources and an unlimited number of area sources (allocated to a grid of 36×36 squares) to be included in the simulation.

g. Plume Behavior

Plume rise calculations are based on Briggs (1975).

h. Horizontal Winds

Gridded hourly multi-level horizontal wind fields are generated using techniques similar

to those reported by Goodin et al. (1979). These involve wind data interpolation, divergence minimization, and terrain adjustment. Trajectory path segments are then generated by interpolation from the gridded horizontal wind fields in 15 minute steps at the user selected vertical level. Either source or receptor oriented trajectory may be generated.

j. Vertical Wind Speed

Vertical speed is produced by WINDMOD, but is not utilized in the trajectory calculation or the pollutant advection algorithm.

k. Vertical Dispersion

Vertical eddy diffusivities (K_z) over land are calculated as a function of wind speed, stability, surface roughness, and boundary layer height. Over water, wind speed, air-to-sea temperature difference, humidity, and boundary layer height are the key parameters.

The effects of vertical dispersion on pollutant concentrations are calculated by numerically integrating finite difference approximations to the diffusion equation.

Mixing heights can be internally calculated or externally specified.

l. Horizontal Dispersion

Horizontal eddy diffusivities (K_x) are calculated either as a function of K_z and stability class or as a function of σ_v . The effects of horizontal dispersion on pollutant concentrations are calculated by numerically integrating finite difference approximations to the diffusion equation.

1. Chemical Transformation

PLMSTAR incorporates a slightly condensed version of the Atkinson et al. (1982) photochemical mechanism for $\text{O}_3/\text{RHC}/\text{NO}_x/\text{SO}_4^{2-}/\text{air}$ mixtures. The mechanism contains 62 reactions involving 38 species, including 8 classes of organic precursors. The effects of chemical transformations on pollutant concentrations are computed by numerically integrating the nonlinear kinetic rate equations.

m. Physical Removal

Dry deposition of O_3 , NO_x , HNO_3 , PAN , SO_2 , and SO_4^{2-} is based on the model of Wesely and Hicks (1977).

n. Evaluation Studies

Lurmann, F.W., D.A. Godden and A.C. Lloyd, 1982. The Development and Selected Sensitivity, Tests of the PLMSTAR Reactive Plume Model, Presented at the Third Joint Conference on Applications of Air Pollution Meteorology, San Antonio, TX.

Godden, D. and F. Lurmann, 1983. Development of the PLMSTAR Model and its Application to Ozone Episode Conditions in the South Coast Air Basin, ERT Document No. P-A702-200, Environmental Research & Technology, Inc., Newbury Park, CA.

Blumenthal, D.L., T.B. Smith, D.E. Lehrman, N.L. Alexander, F. Lurman, and D. Godden, 1985. Analysis of Aerometric and Meteorological Data for the Ventura County Region, Ref. #90094-511-FR. Sonoma Technology, Inc., and Environmental Research and Technology, Inc., for the Western Oil and Gas Association, Los Angeles, CA.

B.19 Plume Visibility Model (PLUVUE II)

Reference

Seigneur, C., C. D. Johnson, D. A. Latimer, R. W. Bergstrom and H. Hogo, 1984. User's Manual for the Plume Visibility Model (PLUVUE II). EPA Publication No. EPA 600/8-84-005. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 84-15830Z).

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

The Plume Visibility Model (PLUVUE II) is a computerized model used for estimating visual range reduction and atmospheric discoloration caused by plumes resulting from the emissions of particles, nitrogen oxides and sulfur oxides from a single emission source. PLUVUE II predicts the transport, dispersion, chemical reactions, optical effects and surface deposition of point or area source emissions. Addenda to the User's Manual were prepared in February 1985 to allow execution of PLUVUE II and the test cases on the UNIVAC computer, the addenda are included in the UNAMAP (Version 6) documentation.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The Plume Visibility Model (PLUVUE II) may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: Location and elevation; emission rates of SO_2 , NO_x , and particulates; flue gas flow rate, exit velocity, and exit temperature; flue gas oxygen content; properties (including density, mass median and standard geometric deviation of radius) of the emitted aerosols in the accumulation (0.1 - $1.0 \mu\text{m}$) and coarse (1.0 - $10.0 \mu\text{m}$) size modes; and deposition velocities for SO_2 , NO_x , coarse mode aerosol, and accumulations mode aerosol.

Meteorological data requirements are: Stability class, wind direction (for an observer-based run), wind speed, lapse rate, air temperature, relative humidity, and mixing height.

Other data requirements are: Ambient background concentrations of NO_x , O_3 , and SO_2 , background visual range or sulfate and nitrate concentrations.

Receptor (observer) data requirements are: Location, elevation, terrain which will be observed through the plume (for observer based run with white, gray, and black viewing backgrounds).

c. Output

Printed output includes: plume concentrations and visual effects at specified downwind distances for calculated or specified lines of sight.

d. Type of Model

PLUVUE is a Gaussian plume model.

e. Pollutant Types

PLUVUE II treats NO, NO₂, SO₂, H₂SO₄, HNO₃, O₃, primary and secondary particles to calculate effects on visibility.

f. Source Receptor Relationship

PLUVUE treats a single point or area source.

Predicted concentrations and visual effects are obtained at user specified downwind distances.

g. Plume Behavior

PLUVUE uses Briggs (1969, 1971, 1972) final plume rise equations.

h. Horizontal Winds

User-specified wind speed (and direction for an observer-based run) are assumed constant for the calculation.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

User specified plume widths, or widths computed from either Pasquill-Gifford-Turner curves (Turner, 1969) or TVA curves (Carpenter, et al., 1971) are used in PLUVUE.

k. Vertical Dispersion

User specified plume depths, or computer from Pasquill-Gifford-Turner curves (Turner, 1969) or TVA curves (Carpenter, et al., 1971) are used in PLUVUE.

l. Chemical Transformation

PLUVUE II treats the chemistry of NO, NO₂, O₃, OH, O(¹D), SO₂, HNO₃, and H₂SO₄, by means of nine reactions. Steady state approximations are used for radicals and for the NO/NO₂/O₃ reactions.

m. Physical Removal

Dry deposition of gaseous and particulate pollutants is treated using deposition velocities.

n. Evaluation Studies

Bergstrom, R.W., C. Seigneur, B. L. Babson, H. Y. Holman and M. A. Wojcik, 1981. Comparison of the Observed and Predicted Visual Effects Caused by Power Plant Plumes. Atmospheric Environment, 15:2135-2150.

Bergstrom, R.W., C. Seigneur, C. D. Johnson, and L. W. Richards, Measurements and Simulations of the Visual Effects of Particulate Plumes. Systems Applications, Inc., San Rafael, CA.

Seigneur, C., R. W. Bergstrom, and A. B. Hudishevskyj, 1982. Evaluation of the EPA PLUVUE Model and the ERT Visibility Model Based on the 1979 VISTTA Data Base. EPA Publication No. EPA-450/4-82-008, U.S. Environmental Protection Agency, Research Triangle Park, NC.

White, W.H., C. Seigneur, D.W. Heinold, M.W. Eltgroth, L.W. Richards, P.T. Roberts, P. S. Bhardwaja, W. D. Conner and W. E. Wilson, Jr. 1985. Predicting the Visibility of Chimney Plumes: An Intercomparison of Four Models with Observations at a Well-Controlled Power Plant, Atmospheric Environment, 19:515-528.

B.20 Point, Area, Line Source Algorithm (PAL-DS)**Reference**

Petersen, W.B., 1978. User's Guide for PAL—A Gaussian-Plume Algorithm for Point, Area, and Line Sources. EPA Publication No. EPA-600/4-78-013. Office of Research and Development, Research Triangle Park, NC. (NTIS PB 281306).

Rao, K.S. and H.F. Snodgrass, 1982. PAL-DS Model: The PAL Model Including Deposition and Sedimentation. EPA Publication No. EPA 600/8-82-023. Office of Research and Development, Research Triangle Park, NC. (NTIS PB 83-117739).

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4850.

Abstract

PAL-DS is an acronym for this point, area, and line source algorithm and is a method of estimating short-term dispersion using Gaussian-plume steady-state assumptions. The algorithm can be used for estimating concentrations of non-reactive pollutants at 99 receptors for averaging times of 1 to 24 hours, and for a limited number of point, area, and line sources (99 of each type). This algorithm is not intended for application to entire urban areas but is intended, rather, to assess the impact on air quality, on scales of tens to hundreds of meters, of portions of urban areas such as shopping centers, large parking areas, and airports. Level terrain is assumed. The Gaussian point source equation estimates concentrations from point sources after determining the effective height of emission and the upwind and crosswind distance of the source from the receptor. Numerical integration of the Gaussian point source equation is used to determine concentrations from the four types of line sources. Subroutines are included that estimate concentrations for multiple lane line and curved path sources, special line sources (line sources with endpoints at different heights above ground), and special curved path sources. Integration over the area source, which includes edge effects from the source region, is done by considering finite line sources perpendicular to the wind at intervals upwind from the receptor. The crosswind integration is done analytically; integration upwinds is done numerically by successive approximations.

The PAL-DS model utilizes Gaussian plume-type diffusion-deposition algorithms based on analytical solutions of a gradient-transfer model. The PAL-DS model can treat

deposition of both gaseous and suspended particulate pollutants in the plume since gravitational settling and dry deposition of the particles are explicitly accounted for. The analytical diffusion-reposition expressions listed in this report in the limit when pollutant settling and deposition velocities are zero, they reduce to the usual Gaussian plume diffusion algorithms in the PAL model.

a. Recommendations for Regulatory Use

PAL-DS can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. PAL-DS must be executed in the equivalent mode.

PAL-DS can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that PAL-DS is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data: point-sources—emission rate, physical stack height, stack gas temperature, stack gas velocity, stack diameter, stack gas volume flow, coordinates of stack, initial σ_x and σ_y ; area sources—source strength, size of area source, coordinates of S.W. corner, and height of area source; and line sources—source strength, number of lanes, height of source, coordinates of end points, initial σ_x and σ_y , width of line source, and width of median. Diurnal variations in emissions are permitted. When applicable, the settling velocity and deposition velocity are also permitted.

Meteorological data: wind profile exponents, anemometer height, wind direction and speed, stability class, mixing height, air temperature, and hourly variations in emission rate.

Receptor data: receptor coordinates.

c. Output**Printed output includes:**

Hourly concentration and deposition flux for each source type at each receptor; and

Average concentration for up to 24 hrs for each source type at each receptor.

d. Type of Model

PAL-DS is a Gaussian plume model.

e. Pollutant Types

PAL-DS may be used to model non-reactive pollutants.

f. Source-Receptor Relationships

Up to 99 sources of each of 6 source types: point, area, and 4 types of line sources.

Source and receptor coordinates are uniquely defined.

Unique stack height for each source.

Coordinates of receptor locations are user defined.

g. Plume Behavior

Briggs final plume rise equations are used. Fumigation and downwash are not treated.

If plume height exceeds mixing height, concentrations are assumed equal to zero.

Surface concentrations are set to zero when the plume centerline exceeds mixing height.

h. Horizontal Winds

User-supplied hourly wind data are used. Constant, uniform (steady-state) wind is assumed within each hour.

Wind is assumed to increase with height.

i. Vertical Wind Speeds

Assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for surface roughness.

Six stability classes are used.

Dispersion coefficients (Pasquill-Gifford) are assumed based on a 3 cm roughness height.

k. Vertical Dispersion

Six stability classes are used.

Rural dispersion coefficients from Turner (1969) are used; no further adjustments are made for variation in surface roughness, transport or averaging time.

Multiple reflection is handled by summation of series until the vertical standard deviation equals 1.8 times mixing height. Uniform vertical mixing is assumed thereafter.

l. Chemical Transformation

Not treated.

m. Physical Removal

PAL-DS can treat deposition of both gaseous and suspended particulates in the plume since gravitational settling and dry deposition of the particles are explicitly accounted for.

n. Evaluation Studies

None.

B.21 Random-Walk Advection and Dispersion Model (RADM)**References**

Austin, D.I., A.W. Bealer, and W.R. Goodin, 1981. Random-Walk Advection and Dispersion Model (RADM), User's Manual. Dames & Moore, Los Angeles, CA.

Runchal, A.K., W.R. Goodin, A.W. Bealer, D.I. Austin, 1981. Technical Description of the Random-Walk Advection and Dispersion Model (RADM). Dames & Moore, Los Angeles, CA.

Availability:

A magnetic tape of the compute code and the user's manual are available for a cost of \$440.00 from: Mr. C. James Osten, Dames & Moore, 445 South Figueroa Street, Suite 3500, Los Angeles, California 90071-1865.

Abstract:

RADM is a Lagrangian dispersion model which uses the random-walk method to simulate atmospheric dispersion. The technical procedure involves tracing tracer particles having a given mass through advection by the mean wind and diffusion by the random motions of atmospheric turbulence. Turbulent movement is calculated by determining the probability distribution of particle movement for a user-defined time step. A random number between 0 and 1 is then computed to determine the distance of particle movement according to the

probability distribution. A large number of particles is used to statistically represent the distribution of pollutant mass.

Concentrations are calculated by summing the mass in a volume around the receptor of interest and dividing the total mass by the volume. Concentrations can be calculated for any averaging time. RADM is applicable to point and area sources.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The RADM model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature. Hourly rates may be specified.

Meteorological data requirements are: Gridded wind field including wind speed, wind direction, stability class, temperature and mixing height.

Receptor data requirements are: Coordinates, ground elevation, and receptor cell dimensions.

c. Output

Printed output includes:

Average concentration by receptor for user-specified averaging time (concentrations are printed for each block of n hours).

Average concentrations for the entire period of the run.

d. Type of Model

RADM is a random-walk Lagrangian dispersion model.

e. Pollutant Types

RADM may be used to model inert gases and particles, and pollutants with exponential decay or formation rates.

f. Source-Receptor Relationship

Multiple point and area sources may be specified at independent locations.

Unique stack characteristics are used for each source.

No restriction is placed on receptor locations.

Perfect reflection at the surface is assumed for the portion not removed by dry deposition.

Particles leaving the gridded area are removed from simulation.

g. Plume Behavior

Briggs (1975) final plume rise equations are used.

Inversion penetration by the plume is allowed.

Fumigation may occur as mixing height rises above a plume which has penetrated an inversion.

h. Horizontal Winds

Wind speed, wind direction, stability class, temperature and mixing height are supplied on a gridded array.

Any wind field may be used as long as output is in correct format for RADM input.

Wind field is updated at user-specified intervals, which may be less than one hour if data are available.

Vertical wind speed profile is used based on surface roughness and stability using Monin-Obukhov length.

i. Vertical Wind Speed

Assumed equal to zero.

j. Horizontal Dispersion

Dispersion is based on diffusivity values calculated from surface roughness, stability class and Monin-Obukhov length.

Diffusivity is a function of height.

k. Vertical Dispersion

Dispersion is based on diffusivity values calculated from surface roughness, stability class and Monin-Obukhov length.

Diffusivity is a function of height.

l. Chemical Transformations

Simple exponential decay or formation is used.

m. Physical Removal

Dry deposition is treated.

n. Evaluation Studies

Runchal, A.K., A.W. Bealer, and G.S. Segal, 1978. A Completely Lagrangian Random-Walk Model for Atmospheric Dispersion. Proceedings of the Thirteenth International Colloquium on Atmospheric Pollution, National Institute for Applications of Chemical Research, Paris, pp. 137-142.

Goodin, W.R., A.K. Runchal, and G.Y. Lou, 1980. Evaluation and Application of the Random-Walk Advection and Dispersion Model (RADM). Symposium on Intermediate Range Atmospheric Transport Processes and Technology Assessment, DOE/NOAA/ORNL, Gatlinburg, TN.

Goodin, W.R., D.I. Austin and A.K. Runchal, 1980. A Model Verification and Prediction study of $\text{SO}_2/\text{SO}_4^{2-}$ Concentrations in the San Francisco Bay Area. Second Joint Conference on Applications of Air Pollution Meteorology, AMS/APCA, New Orleans, LA.

B.22 Reactive Plume Model (RPM-II)**Reference**

D. Stewart, M. Yocke, and M-K Liu, 1981. Reactive Plume Model—RPM-II, User's Guide, EPA Publication No. EPA 600/8-81-021 U.S. Environmental Protection Agency, ESRL, Research Triangle Park, NC. (NTIS PB82-230723)

Availability:

The above report is available from NTIS (\$16.95 for paper copy; \$5.95 on microfiche). The accession number for the computer tape for RPM-II is PB83-154898, and the cost is \$460.00. Requests should be sent to: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract:

The Reactive Plume Model, RPM-II, is a computerized model used for estimating short-term concentrations of primary and secondary pollutants resulting from point or area source emissions. The model is capable of simulating the complex interaction of plume dispersion and non-linear photochemistry. Two main features of the

model are: (1) The horizontal resolution within the plume, which offers a more realistic treatment of the entrainment process, and (2) its flexibility with regard to choices of chemical kinetic mechanisms.

a. Recommendations for Regulatory Use

There is no specific recommendations at the present time. The RPM-II Model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: Emission rates, name, and molecular weight of each species of pollutant emitted; ambient pressure, ambient temperature, stack height, stack diameter, stack exit velocity, stack gas temperature, and location.

Meteorological data requirements are: Wind speeds, plume widths or stability classes, photolytic rate constants, and plume depths or stability classes.

Receptor data requirements are: Downwind distances or travel times at which calculations are to be made.

Initial concentration of all species is required, and the specification of downwind ambient concentrations to be entrained by the plume is optional.

c. Output

Short-term concentrations of primary and secondary pollutants at either user specified time increments, or user specified downwind distances.

d. Type of Model

Reactive plume model.

e. Pollutant Types

Currently, using the Carbon Bond Mechanism (CBM-II), 35 species are simulated (68 reactions), including NO, NO₂, O₃, SO₂, SO₄, five categories of reactive hydrocarbons, secondary nitrogen compounds, organic aerosols, and radical species.

f. Source-Receptor Relationships

Single point source.

Single area or volume source.

Multiple sources can be simulated if they are lined up along the wind trajectory.

Predicted concentrations are obtained at a user specified time increment, or at user specified downwind distances.

g. Plume Behavior

Briggs (1971) plume rise equations are used.

h. Horizontal Winds

User specifies wind speeds as a function of time.

i. Vertical Wind Speed

Not treated.

j. Horizontal Dispersion

User specified plume widths, or user may specify stability and widths will be computed using Turner (1969).

k. Vertical Dispersion

User specified plume depths, or user may specify stability in which case depths will be calculated using Turner (1969). Note that vertical uniformity in plume concentration is assumed.

l. Chemical Transformation

The RPM-II has the flexibility of using any user input chemical kinetic mechanism. Currently it is run using the chemistry of the Carbon Bond Mechanism, CBM-II (Whitten, Killus, and Hogo, 1980). The CBM-II, as incorporated in the RPM-II, contains 35 species and 68 reactions focusing primarily on hydrocarbon-nitrogen oxides-ozone photochemistry.

m. Physical Removal

Not treated.

n. Evaluation Studies

Stewart, D.A. and M-K Liu, 1981. Development and Application of a Reactive Plume Model, Atmospheric Environment, 15:2377-2393.

B.23 Regional Transport Model (RTM-II)

Reference

Morris, R.E., D.A. Stewart, and M-K Liu, 1982. Revised User's Guide to the Regional Transport Model—Version II. Publication No. SYSAPP-83/022, Systems Applications Inc., San Rafael, CA.

Availability

The computer code is available on magnetic tape for a cost of \$100 (which includes the User's Manual) from: Systems Applications, Inc., 101 Lucas Valley Road, San Raphael, California 94903.

Abstract

The Regional Transport Model (RTM-II) is a computer based air quality grid model whose primary use is estimating the distribution of air pollution from multiple point sources and area sources at large distances (on the scale of several hundred to a thousand kilometers). RTM-II offers significant advantages over other long-range transport models because it is a quasi-three dimensional hybrid (grid plus Lagrangian puff) approach to the solution of the advection-diffusion equation. Furthermore, its formulation allows the treatment of spatially and temporally varying wind, mixing depths, diffusivity, and transformation rate fields. It is also capable of treating spatially varying surface depletion processes. While the modeling concept is capable of predicting concentration distributions of many pollutant species (e.g., NO_x, CO, TSP, etc.), the most notable applications of the model to date focus on the long-range transport and transformation of SO₂ and sulfates.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The RTM Model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: Major point source SO₂ and primary sulfate emissions, including stack height, diameter, exit velocity, exit temperature, and hourly emission factors; area source SO₂ and primary SO₄ emissions in gridded format.

Meteorological data requirements are: Gridded u, v wind fields at user specified update interval (model configured for separate wind fields in each of two layers), derived from twice daily radiosonde data,

time variation linear between a maximum convectively driven boundary layer and a minimum mechanically driven boundary layer, spatial interpolation by an inverse distance weighted objective scheme; gridded hourly precipitation fields determined either by averaging precipitation rate of all stations in grid (if high density), or by inverse distance weighted interpolation (if low density).

Other data requirements are: Parameter file, containing region definition, starting time, output and averaging time intervals, region top specifications, and various operational flags; horizontal diffusivity fields calculated from wind fields; land use type file; deposition velocities and roughness length determined internally from tabulated values associated with land use types; initial conditions and boundary conditions for both layers (boundary conditions may be time varying).

c. Output

Printed output includes:

Diagnostic information.

Instantaneous SO₂ and sulfate concentration fields for lower and upper layers at pre-specified time intervals.

Average SO₂ and sulfate concentration fields for upper and lower layer, over pre-specified time intervals. Accumulated dry and wet deposition for each species over pre-selected time intervals.

d. Type of Model

RTM-II is a hybrid Eulerian grid and Lagrangian puff model.

e. Pollutant Types

RTM-II is configured for SO₂ and sulfate only. Primary sulfate emissions may be included.

f. Source Receptor Relationships

Area sources and minor point sources are specified at each grid within the modeling domain.

Up to 500 major point sources (modeled with the Gaussian puff submodel) are allowed.

Grid average concentration and deposition totals are provided at each grid within the modeling domain (dry deposition for lower layer grid only). All lower grid average concentration values are assumed to be representative of ground-level receptors.

g. Plume Behavior

Plume rise (Briggs, 1971) is calculated for all major point sources regardless of whether they are treated in the Gaussian puff submodel.

h. Horizontal Winds

Gridded u, v wind fields are used at a user specified update interval for each layer.

Gaussian puff submodel tracks puff centroids horizontally at user specified time intervals.

i. Vertical Wind Speed

Considered implicitly if convergent or divergent winds are provided.

j. Horizontal Dispersion

Plume dispersion is based on σ_z , differentials derived from a power law fit to

Turner (1969) dispersion curves. Variable stabilities within adjacent cells are considered.

Horizontal eddy diffusivities are proportional to the wind field deformation and are calculated from the gridded wind fields as ancillary input. Maximum and minimum constraints are imposed on the magnitude of the diffusivities.

k. Vertical Dispersion

Plume dispersion is based on σ_z differentials derived from a power law fit to Turner (1969) dispersion curves. Variable stabilities within adjacent cells are considered.

Vertical dispersion across the mixed layer-surface layer interface is considered when calculating pollutant deposition.

l. Chemical Transformation

Linear SO₂ oxidation is treated. Rate constant is diurnally and latitudinally variable. A minimum oxidation rate constant is specified to account for heterogeneous oxidation during the nighttime.

m. Physical Removal

Dry deposition of SO₂ and sulfate is treated. Precipitation scavenging of SO₂ (reversible) and sulfate (irreversible) is treated.

n. Evaluation Studies

Stewart, D.A., R.E. Morris, M-K Liu, and D. Henderson, 1983. Evaluation of an Episodic Regional Transport Model for a Multiple Day Episode. Atmospheric Environment, 17:1225-1252.

B.24 SHORTZ

Reference

Bjorklund, J.R., and J.F. Bowers, 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs, Volumes I and II. EPA Publication No. EPA 903/9-82004a and b, U.S. Environmental Protection Agency, Region III, Philadelphia PA.

Availability

This model is available as part of UNAMAP. (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, phone (703) 487-4650.

Abstract

SHORTZ utilizes the steady state bivariate Gaussian plume formulation for both urban and rural areas in flat or complex terrain to calculate ground-level ambient air concentrations. It can calculate 1-hour, 2-hour, 3-hour etc. average concentrations due to emissions from stacks, buildings and area sources for up to 300 arbitrarily placed sources. The output consists of total concentration at each receptor due to emissions from each user-specified source or group of sources, including all sources. If the option for gravitational settling is invoked, analysis cannot be accomplished in complex terrain without violating mass continuity.

a. Recommendations for Regulatory Use

SHORTZ can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. SHORTZ must be executed in the equivalent mode.

SHORTZ can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that SHORTZ is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: For point, building or area sources, location, elevation, total emission rate (optionally classified by gravitational settling velocity) and decay coefficient; for stack sources, stack height, effluent temperature, effluent exist velocity, stack radius (inner), actual volumetric flow rate, and ground elevation (optional); for building sources, height, length and width, and orientation; for area sources, characteristic vertical dimension, and length, width and orientation.

Meteorological data requirements are: Wind speed and measurement height, wind profile exponents, wind direction, standard deviations of vertical and horizontal wind directions, (i.e., vertical and lateral turbulent intensities), mixing height, air temperature, and vertical potential temperature gradient.

Receptor data requirements are: Coordinates, ground elevation.

c. Output

Printed output includes: Total concentration due to emissions from user-specified source groups, including the combined emissions from all sources (with optional allowance for depletion by deposition).

d. Type of Model

SHORTZ is a Gaussian plume model.

e. Pollutant Types

SHORTZ may be used to model primary pollutants. Settling and deposition of particulates are treated.

f. Source-Receptor Relationships

User specified locations for sources and receptors are used.

Receptors are assumed to be at ground level.

g. Plume Behavior

Plume rise equations of Bjorklund and Bowers (1982) are used.

Stack tip downwash (Bjorklund and Bowers, 1982) is included.

All plumes move horizontally and will fully intercept elevated terrain.

Plumes above mixing height are ignored.

Perfect reflection at mixing height is assumed for plumes below the mixing height.

Plume rise is limited when the mean wind at stack height approaches or exceeds stack exit velocity.

Perfect reflection at ground is assumed for pollutants with no settling velocity.

Zero reflection at ground is assumed for pollutants with finite settling velocity.

Tilted plume is used for pollutants with settling velocity specified.

Buoyancy-induced dispersion (Briggs, 1972) is included.

h. Horizontal Winds

Winds are assumed homogeneous and steady-state.

Wind speed profile exponents are functions of both stability class and wind speed. Default values are specified in Bjorklund and Bowers (1982).

i. Vertical Wind Speed

Vertical winds are assumed equal to zero.

j. Horizontal Dispersion

Horizontal plume size is derived from input lateral turbulent intensities using adjustments to plume height, and rate plume growth with downwind distance specified in Bjorklund and Bowers (1982).

k. Vertical Dispersion

Vertical plume size is derived from input vertical turbulent intensities using adjustments to plume height and rate of plume growth with downwind distance specified in Bjorklund and Bowers (1982).

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. Physical Removal

Settling and deposition of particulates are treated.

n. Evaluation Studies

Bjorklund, J.R., and J.F. Bowers, 1982. User's instructions for the SHORTZ and LONGZ Computer Programs. EPA Publication No. EPA 903/9-82-004. EPA Environmental Protection Agency, Region III, Philadelphia, PA.

Wackter, D., and R. Londergan, 1984.

Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA 450/4-84-017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.25 Simple Line-Source Model (GMLINE)

Reference

Chock, D.P., 1980. User's Guide for the Simple Line-Source Model for Vehicle Exhaust Dispersion Near a Road, Environmental Science Department, General Motors Research Laboratories, Warren, MI.

Availability

Copies of the above reference are available without charge from: Dr. D.P. Chock, Environmental Science Department, General Motors Research Laboratories, General Motors Technical Center, Warren, Michigan 48090. The User's Guide contains the short algorithm of the model.

Abstract

GMLINE is a simple steady-state Gaussian plume model which can be used to determine hourly (or half-hourly) averages of exhaust concentrations within 100m from a roadway on a relatively flat terrain. The model allows for plume rise due to the heated exhaust, which can be important when the crossroad wind is very low. It also utilizes a new set of

vertical dispersion parameters which reflects the influence of traffic-induced turbulence.

a. Recommendations for Regulatory Use

GMLINE can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. GMLINE must be executed in the equivalent mode.

GMLINE can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that GMLINE is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Emission rate per unit length per lane, the number of lanes on each road, distances from lane centers to the receptor, source and receptor heights.

Meteorological data requirements are: Buoyancy flux, ambient stability condition, ambient wind and its direction relative to the road.

Receptor data requirements are: Distance and height above ground.

c. Output

Printed output includes: Hourly or (half-hourly) concentrations at the receptor due to exhaust emission from a road (or a system of roads) by summing the results from repeated model applications.

d. Type of Model

GMLINE is a Gaussian plume model.

e. Pollutant Types

GMLINE can be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

GMLINE treats arbitrary location of line sources and receptors.

g. Plume Behavior

Plume-rise formula adequate for a heated line source is used.

h. Horizontal Winds

GMLINE uses user-supplied hourly (or half-hourly) ambient wind speed and direction. The wind measurements are from a height of 5 to 10 m.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Dispersion Parameters

Horizontal dispersion parameter is not used.

k. Vertical Dispersion

A vertical dispersion parameter is used which is a function of stability and wind-road angle. Three stability classes are used: Unstable, neutral and stable. The parameters take into account the effect of traffic-generated turbulence (Chock, 1980).

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

- Chock, D.P., 1978. A Simple Line-Source Model for Dispersion Near Roadways, Atmospheric Environment, 12:823-829.
Sistla, G., P. Samson, M. Keenan, and S.T. Ras, 1979. A Study of Pollutant Dispersion Near Highways, Atmospheric Environment 13:669-685.

B.26 TEXAS CLIMATOLOGICAL MODEL (TCM)-2

Reference

Staff of the Texas Air Control Board, 1980. User's Guide to the TEXAS CLIMATOLOGICAL MODEL (TCM). Texas Air Control Board, Permits Section, 6330 Highway 290 East, Austin, TX.

Availability

The TCM-2 model is available from the Texas Air Control Board at the following cost: User's Manual only—\$20.00. User's Manual and Model (Magnetic Tape)—\$80.00.

Requests should be directed to: Data Processing Division, Texas Air Control Board, 6330 Highway 290 East, Austin, Texas 78723.

Abstract

TCM is a climatological steady-state Gaussian plume model for determining long-term (seasonal or annual arithmetic) average pollutant concentrations of non-reactive pollutants.

a. Recommendations for Regulatory Use

TCM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. TCM must be executed in the equivalent mode.

TCM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that TCM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: Point source coordinates emission rates (by pollutant), stack height, stack diameter, stack gas exit velocity, stack gas temperature; area source coordinates (southwest corner), size, emission rate.

Meteorological data requirements are: Stability wind rose and average temperature.

Receptor data requirements are: Size and spacing of the rectangular receptor grid.

c. Output

Printed output includes:
Period average concentrations listed, displayed in map format, or punched on cards at the user's options.

Culpability list option provides the contributions of the five highest contributors at each receptor.

Maximum concentration option provides the maximum concentration for each scenario (run).

d. Type of Model

TCM is a Gaussian plume model.

e. Pollutant Types

TCM may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

Arbitrary location of point sources and area sources are treated.

Arbitrary location and spacing of rectangular grid of receptors are used. (Area source grid is best defined in terms of the receptor grid, so that the receptors fall in the center of the area source).

Receptors located in simple terrain may be modeled.

g. Plume Behavior

Briggs (1975) plume rise equations, including momentum rise, are used for point sources.

Two-thirds power law is used when transitional rise option is selected.

Flares are treated.

h. Horizontal Winds

Characteristic wind speed is calculated for each direction-stability class combination.

This characteristic speed is the inverse of the average inverse speed for the stability-wind direction combination.

Wind speed is adjusted to stack height by a power law using exponents of .10, .15, .20, .25, .30, and .30 for stabilities A through F, respectively.

i. Vertical Wind Speed

Vertical wind speed is assumed to be zero.

j. Horizontal Dispersion

Uniform distribution within each 22.5 degree sector is assumed

k. Vertical Dispersion

Dispersion parameters for point sources are fit to Turner (1969); for area sources in the urban mode the fit is to Gifford and Hanna (1970).

Seven stability classes are used.

Pasquill A through F are treated, with daytime "D" and nighttime "D" given separately.

In the urban mode, E and F stability classes are treated as D-night.

Perfect reflection at the ground is assumed.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is treated using exponential decay. Half-life is input by the user.

n. Evaluation Studies

Londergan, R.J., D.H. Minott, D.J. Wachter and R.R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models. EPA Publication No. EPA-450/4-83-020. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Durrenberger, C.S., B.A. Braberg, and K.

Zimmerman, 1983. Development of a Protocol to be Used for Dispersion Model Comparison Studies. Presented at the 76th Annual Meeting of the Air Pollution Control Association, Atlanta, GA.

B.27 TEXAS EPISODIC MODEL (TEM-8)**Reference**

Staff of the Texas Air Control Board, 1979. User's Guide to the TEXAS EPISODIC MODEL. Texas Air Control Board, Permits Section, 6330 Highway 290 East, Austin, TX.

Availability

The TEM-8 model is available from the Texas Air Control Board at the following costs: User's Manual only—\$20.00. User's Manual and Model (Magnetic Tape)—\$80.00.

Requests should be directed to: Data Processing Division, Texas Air Control Board, 6330 Highway 290 East, Austin, Texas 78723.

Abstract:

TEM is a short-term, steady-state Gaussian plume model for determining short-term concentrations of non-reactive pollutants.

a. Recommendations for Regulatory Use

TEM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. TEM must be executed in the equivalent mode.

TEM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that TEM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: locations, average emission rates and heights of emissions for both point and area sources; stack gas temperature, stack gas exit velocity, and stack inside diameter for point sources for plume rise calculations.

Meteorological data requirements are: hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Any combination of hourly meteorological data up to 24 hours may be used, (e.g. 1, 3, 5, 8, 24 hours).

Receptor requirements are: size, spacing and location of rectangular grid of receptors.

c. Output

Printed output includes: concentration list; Spatial array (concentrations displayed as on a map);

Punched cards of the concentration list; Culpability list (percent contributions) of the five highest contributors to each receptor; Maximum concentration; and Point source list.

d. Type of Model

TEM is a Gaussian plume model.

e. Pollutant Types

TEM can be used to model non-reactive pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

Arbitrary locations of point sources and area sources are treated.

Arbitrary location and spacing of rectangular grid of receptors is treated. Area source grid is best defined in terms of the receptor grid so that the receptors fall in the centers of the area sources.

Receptors located in simple terrain may be modeled.

g. Plume Behavior

Briggs (1975) plume rise equations are used, including momentum rise, for point sources.

Transitional rise is calculated.

Stack-tip downwash may be evaluated.

h. Horizontal Winds

Wind speeds are adjusted to release height by power law formula, using exponents of .10, .15, .20, .25, .30 and .30 for stabilities A through F respectively.

Steady-state wind is assumed.

i. Vertical Wind Speed

Vertical wind is assumed equal to zero.

j. Horizontal Dispersion

Gaussian plume coefficients are fitted to Turner (1969). The Turner curves are treated as 10-minute averages and the coefficients are adjusted to represent 30-minute or hourly as appropriate.

In the urban mode, stable cases are shifted to neutral nighttime (D-night) conditions and urban mixing heights are used.

k. Vertical Dispersion

Dispersion parameters for point sources are fit to Turner (1969); for area sources, in the urban mode, the fit is to Gifford and Hanna (1970).

Total reflection of the plume at the ground is assumed.

In the urban mode, E and F stability classes are treated as D-nighttime.

l. Chemical Transformation

Chemical transformation is treated using exponential decay. Half-life is input by the user.

m. Physical Removal

Physical removal is treated using exponential decay. Half-life is input by the user.

n. Evaluation Studies

Lonergan, R., D. Minott, D. Wachter, T. Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA-450/4-83-003, Environmental Protection Agency, Research Triangle Park, NC.

Durrenberger, C.J., B.A. Broberg, and K. Zimmermann, 1983. Development of a Protocol to be Used for Dispersion Model Comparison Studies. Presented at the 76th Annual Meeting of the Air Pollution Control Association at Atlanta, GA.

B.28 AVALTA II**Reference**

Zannetti, P., G. Carboni and R. Lewis, 1985. AVALTA II User's Guide (Release 3). AeroVironment, Inc., Technical Report AV-OM-85/520.

Availability

A magnetic tape copy of the FORTRAN coding and the user's guide are available at a cost of \$2,500 (non-profit organization) or

\$3,500 (other organizations) from: AeroVironment, Inc., 825 Myrtle Avenue, Monrovia, CA 91016, phone (818) 357-9983.

Abstract

The AVALTA II model is a Gaussian model in which atmospheric dispersion phenomena are described by the evolution of plume elements, either segments or puffs. The model can be applied for short time (e.g., one day) simulations in both transport and calm conditions.

The user is given flexibility in defining the computational domain, the three-dimensional meteorological and emission input, the receptor locations, the plume rise formulas, the sigma formulas, etc. Without explicit user's specifications, standard default values are assumed.

AVALTA II provides both concentration fields on the user specified receptor points, and dry/wet deposition patterns throughout the domain. The model is particularly oriented to the simulation of the dynamics and transformation of sulfur species (SO_2 and SO_4^{2-}), but can handle virtually any pair of primary-secondary pollutants.

a. Recommendations for Regulatory Use

AVALTA II can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. AVALTA II must be executed in the equivalent mode.

AVALTA II can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that AVALTA II is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements (all time-varying)

A time-varying input is required at each computational step. Only those data which have changed need to be input by the user.

Source data requirements are: Coordinates, emission rates of primary and secondary pollutants, initial plume sigmas (for non-point sources), exit temperature, exit velocity, stack inside diameter.

Meteorological data requirements are: surface wind measurements, wind profiles (if available), atmospheric stability profiles, mixing heights.

Receptor data requirements are: receptor coordinates.

Other data requirements: coordinates of the computational domain, grid cell specification, terrain elevations, user's computational and printing options.

c. Output

The model's output is provided according to user's printing flags. Hourly, 3-hour and 24-hour concentration averages are computed, together with highest and highest-second-highest concentration values. Both partial and total concentrations are provided.

d. Type of Model

AVALTA II is Gaussian plume segment/puff model.

e. Pollutant Types

AVALTA II can handle any couple of primary-secondary pollutants (e.g. SO_2 and SO_4^{2-}).

f. Source Receptor Relationship

The AACTA II approach maintains the basic Gaussian formulation, but allows a numerical simulation of both nonstationary and nonhomogeneous meteorological conditions. The emitted pollutant material is divided into a sequence of "elements," either segments or puffs, which are connected together but whose dynamics are a function of the local meteorological conditions. Since the meteorological parameters vary with time and space, each element evolves according to the different meteorological conditions encountered along its trajectory.

AACTA II calculates the partial contribution of each source in each receptor during each interval. The partial concentration is the sum of the contribution of all existing puffs, plus that of the closest segment.

g. Plume Behavior

The user can select the following plume rise formulas:

Briggs (1969, 1971, 1972)

CONCAWE (Briggs, 1975)

Lucas-Moore (Briggs, 1975)

User's functions, i.e., a subroutine supplied by the user

With cold plumes, the program uses a special routine for the computation of the jet plume rise. The user can also select several computational options that control plume behavior in complex terrain and its total/partial reflections.

h. Horizontal Winds

A 3D mass-consistent wind field is optionally generated.

i. Vertical Wind Speed

A 3D mass-consistent wind field is optionally generated.

j. Horizontal Dispersion

During each step, the sigmas of each element are increased. The user can select the following sigma functions:

Pasquill-Gifford-Turner (in the functional form specified by Green et al., 1980)

Brookhaven (Gifford, 1975)

Briggs, open country (Gifford, 1975)

Briggs, urban, i.e., McElroy-Pooler (Gifford, 1975)

Irwin (1979)

LO-LOCAT (MacCready et al., 1974)

User-specified function, by points

User-specified function, with a user's subroutine

The virtual distance/age concept is used for incrementing the sigmas at each time step.

k. Vertical Dispersion

During each step, the sigmas of each element are increased. The user can select the following sigma functions:

Pasquill-Gifford-Turner (in the functional form specified by Green et al., 1980)

Brookhaven (Gifford, 1975)

Briggs, open country (Gifford, 1975)

Briggs, urban, i.e., McElroy-Pooler (Gifford, 1975)

LO-LOCAT (MacCready et al., 1974)

User-specified function, with a user's subroutine

The virtual distance/age concept is used for incrementing the sigmas at each time step.

l. Chemical Transformation

First order chemical reactions (primary-to-secondary pollutant)

m. Physical Removal

First order dry and wet deposition schemes.

n. Evaluation Studies

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Eschenroeder, A.Q., 1972. Evaluation of a Diffusion Model for Photochemical Smog Simulation. EPA Publication No. EPA-R4-73-012. U.S. Environmental Protection Agency, Research Triangle Park, NC.

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APPENDIX C TO APPENDIX X TO PART 266—

Example Air Quality Analysis Checklist

C.O INTRODUCTION

This checklist recommends a standardized set of data and a standard basic level of analysis needed for PSD applications and SIP revisions. The checklist implies a level of detail required to assess both PSD increments and the NAAQS. Individual cases may require more or less information and the Regional Meteorologist should be consulted at an early stage in the development of a data base for a modeling analysis.

At pre-application meetings between source owner and reviewing authority, this checklist should prove useful in developing a consensus on the data base, modeling techniques and overall technical approach prior to the actual analyses. Such agreement will help avoid misunderstandings concerning the final results and may reduce the later need for additional analyses.

Example Air Quality Analysis Checklist¹

1. Source location map(s) showing location with respect to:
 - Urban areas²
 - PSD Class I areas
 - Nonattainment areas²
 - Topographic features (terrain, lakes, river valleys, etc.)²
 - Other major existing sources²
 - Other major sources subject to PSD requirements
 - NWS meteorological observations (surface and upper air)
 - On-site/local meteorological observations (surface and upper air)
 - State/local/on-site air quality monitoring location²

¹ The "Guidelines for Air Quality Maintenance Planning and Analysis," Volume 10R, EPA-450/4-77-001, 1977 should be used as a screening tool to determine whether modeling analyses are required. Screening procedures should be refined by the user to be site/problem specific.

² Within 50 km or distance to which source has a significant impact, whichever is less.

- Plant layout on a topographic map covering a 1-km radius of the source with information sufficient to determine GEP stack heights

2. Information on urban/rural characteristics:

- Land use within 3 km of source classified according to Auer, A.H. (1978): Correlation of land use and cover with meteorological anomalies. *J. of Applied Meteorology*, 17:636-643.

- Population

- total

- density

- Based on current guidance determination of whether the area should be addressed using urban or rural modeling methodology

- 3. Emission inventory and operating/design parameters for major sources within region of significant impact of proposed site (same as required for applicant)

- Actual and allowable annual emission rates (g/s) and operating rates³

- Maximum design load short-term emission rate (g/s)³

- Associated emissions/stack characteristics as a function of load for maximum, average, and nominal operating conditions if stack height is less than GEP or located in complex terrain. Screening analyses as footnoted on page 1 or detailed analyses, if necessary, must be employed to determine the constraining load condition (e.g., 50%, 75%, or 100% load) to be relied upon in the short-term modeling analysis.

- location (UTM's)

- height of stack (m) and grade level above MSL

- stack exit diameter (m)

- exit velocity (m/s)

- exit temperature (°K)

- Area source emissions (rates, size of area, height of area source)³

- Location and dimensions of buildings (plant layout drawing)

- to determine GEP stack height

- to determine potential building downwash considerations for stack heights less than GEP

- Associated parameters

- boiler size (megawatts, pounds/hr. steam, fuel consumption, etc.)

- boiler parameters (% excess air, boiler type, type of firing, etc.)

- operating conditions (pollutant content in fuel, hours of operation, capacity factor, % load for winter, summer, etc.)

- pollutant control equipment parameters (design efficiency, operation record, e.g., can it be bypassed?, etc.)

- Anticipated growth changes

- 4. Air quality monitoring data:

- Summary of existing observations for latest five years (including any additional quality assured measured data which can be obtained from any state or local agency or company)⁴

- Comparison with standards

- Discussion of background due to uninventoried sources and contributions from outside the inventoried area and description

³ Particulate emissions should be specified as a function of particulate diameter and density ranges.

⁴ See footnote 1.

of the method used for determination of background (should be consistent with the Guideline on Air Quality Models)

5. Meteorological data:

- Five consecutive years of the most recent representative sequential hourly National Weather Service (NWS) data, or one or more years of hourly sequential on-site data

- Discussion of meteorological conditions observed (as applied or modified for the site-specific area, i.e., identify possible variations due to difference between the monitoring site and the specific site of the source)

- Discussion of topographic/land use influences

6. Air quality modeling analyses:

- Model each individual year for which data are available with a recommended model or model demonstrated to be acceptable on a case-by-case basis

- urban dispersion coefficients for urban areas

- rural dispersion coefficients for rural areas

- Evaluate downwash if stack height is less than GEP

- Define worst case meteorology
- Determine background and document method
- long-term
- short-term
- Provide topographic map(s) of receptor network with respect to location of all sources

- Follow current guidance on selection of receptor sites for refined analyses
- Include receptor terrain heights (if applicable) used in analyses
- Compare model estimates with measurements considering the upper ends of the frequency distribution

- Determine extent of significant impact—provide maps

- Define areas of maximum and highest, second-highest impacts due to applicant source (refer to format suggested in Air Quality Summary Tables)

- long term

- short term

- Comparison with acceptable air quality levels:

- NAAQS
- PSD increments
- Emission offset impacts if nonattainment
- Documentation and guidelines for modeling methodology:
 - Follow guidance documents
 - Guideline on Air Quality Models, Revised, EPA-450/2-78-027R
 - Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10R, EPA-450/4-77-001, 1977
 - Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations), EPA-450/4-80-023R, 1985
 - Ambient Air Monitoring Guidelines for PSD, EPA-450/4-80-012, 1980
 - “Requirements for Preparation, Adoption and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans,” CFR title 40 parts 51, 1982 (Prevention of Significant Deterioration)

AIR QUALITY SUMMARY

For New Source Alone

	Pollutant _____*	**	**	Annual
	Highest	Highest 2nd High	Highest	Highest 2nd High
Concentration Due to Modeled Source ($\mu\text{g}/\text{m}^3$)				
Background Concentration ($\mu\text{g}/\text{m}^3$)				
Total Concentration ($\mu\text{g}/\text{m}^3$)				
Receptor Distance (Km) (or UTM Easting)				
Receptor Direction (°) (or UTM Northing)				
Receptor Elevation (m)				
Wind Speed (m/s)				
Wind Direction (°)				
Mixing Depth (m)				
Temperature (°K)				
Stability				
Day/Month/Year of Occurrence				
Surface Air Data From				
Surface Station Elevation (m)				
Anemometer Height Above Local Ground Level (m)				
Upper Air Data From				
Period of Record Analyzed				
Model Used				
Recommended Model				

*Use separate sheet for each pollutant (SO₂, TSP, CO, NO_x, HC, Pb, Hg, Asbestos, etc.)

**List all appropriate averaging periods (1-hr, 3-hr, 8-hr, 24-hr, 30-day, 90-day, etc.) for which an air quality standard exists.

For All New Sources

	Pollutant _____*	**	**	Annual
	Highest	Highest 2nd High	Highest	Highest 2nd High
Concentration Due to Modeled Source ($\mu\text{g}/\text{m}^3$)				
Background Concentration ($\mu\text{g}/\text{m}^3$)				
Total Concentration ($\mu\text{g}/\text{m}^3$)				
Receptor Distance (Km) (or UTM Easting)				
Receptor Direction (°) (or UTM Northing)				
Receptor Elevation (m)				
Wind Speed (m/s)				
Wind Direction (°)				
Mixing Depth (m)				
Temperature (°K)				
Stability				

For All New Sources

Pollutant _____

Annual

Highest	Highest 2nd High	Highest	Highest 2nd High
---------	---------------------	---------	---------------------

Day/Month/Year of Occurrence.....

Surface Air Data From.....

Surface Station Elevation (m).....

Anemometer Height Above Local Ground Level (m).....

Upper Air Data From.....

Period of Record Analyzed.....

Model Used.....

Recommended Model.....

*Use separate sheet for each pollutant (SO₂, TSP, CO, NO_x, HC, Pb, Hg, Asbestos, etc.)

**List all appropriate averaging periods (1-hr, 3-hr, 8-hr, 24-hr, 30-day, 90-day, etc.) for which an air quality standard exists.

For All Sources

Pollutant _____

Annual

Highest	Highest 2nd High	Highest	Highest 2nd High
---------	---------------------	---------	---------------------

Concentration Due to Modeled Source ($\mu\text{g}/\text{m}^3$).....Background Concentration ($\mu\text{g}/\text{m}^3$).....Total Concentration ($\mu\text{g}/\text{m}^3$).....

Receptor Distance (Km) (or UTM Easting).....

Receptor Direction (°) (or UTM Northing).....

Receptor Elevation (m).....

Wind Speed (m/s).....

Wind Direction (°).....

Mixing Depth (m).....

Temperature (°K).....

Stability.....

Day/Month/Year of Occurrence.....

Surface Air Data From.....

Surface Station Elevation (m).....

Anemometer Height Above Local Ground Level (m).....

Upper Air Data From.....

Period of Record Analyzed.....

Model Used.....

Recommended Model.....

*Use separate sheet for each pollutant (SO₂, TSP, CO, NO_x, HC, Pb, Hg, Asbestos, etc.)

**List all appropriate averaging periods (1-hr, 3-hr, 8-hr, 24-hr, 30-day, 90-day, etc.) for which an air quality standard exists.

STACK PARAMETERS FOR ANNUAL MODELING

Stack No.	Serving	Emission Rate for each Pollutant (g/s)	Stack Exit Diameter (m)	Stack Exit Velocity (m/s)	Stack Exit Temperature (°K)	Physical Stack Height (m)	GEP Stack Height (m)	Stack Base Elevation (m)	Building Dimensions (m)		
									Height	Width	Length

STACK PARAMETERS FOR SHORT-TERM MODELING*

Stack No.	Serving	Emission Rate for each Pollutant (g/s)	Stack Exit Diameter (m)	Stack Exit Velocity (m/s)	Stack Exit Temperature (°K)	Physical Stack Height (m)	GEP Stack Height (m)	Stack Base Elevation (m)	Building Dimensions (m)		
									Height	Width	Length

* Separate tables for 50%, 75%, 100% of full load operating condition (and any other operating conditions as determined by screening or detailed modeling analyses to represent constraining operating conditions) should be provided.

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Wednesday
July 17, 1991



Part III

Department of Health and Human Services

Administration for Children and Families

**Developmental Disabilities: Availability of
Financial Assistance for Projects of
National Significance for Fiscal Year
1991; Notice**

DEPARTMENT OF HEALTH AND HUMAN SERVICES**Administration for Children and Families**

[Program Announcement No. 93631-91-04]

Developmental Disabilities: Availability of Financial Assistance for Projects of National Significance for Fiscal Year 1991

AGENCY: Administration on Developmental Disabilities (ADD), Administration for Children and Families (ACF).

ACTION: Announcement of availability of financial assistance for Projects of National Significance for Fiscal Year 1991.

SUMMARY: The Administration on Developmental Disabilities, Administration for Children and Families, announces that applications are being accepted for funding of Fiscal Year 1991 Projects of National Significance.

This program announcement consists of five parts. Part I, the introduction, discusses the goals and objectives of ACF and ADD. Part II provides the necessary background information on ADD for applicants. Part III describes the priorities under which ADD solicits applications for Fiscal Year 1991 funding of projects. Part IV describes the application process and part V describes in detail how to prepare and submit an application. All of the forms and instructions necessary to submit an application are published as part of this announcement following part V.

No separate application kit is either necessary or available for submitting an application. If you have a copy of this announcement, you have all the information and forms required to submit an application.

Grants will be awarded under this program announcement subject to the availability of funds for support of these activities.

DATES: Closing date for submittal of applications under this announcement is August 29, 1991.

ADDRESSES: Applications should be sent to: Department of Health and Human Services, ACF/Grants and Contracts Management Division, 200 Independence Avenue, SW., Room 341-F, Washington, DC 20201, Attn: ACF-ADD-91-04.

FOR FURTHER INFORMATION CONTACT: Kay Smith, Program Development Division, Administration on Developmental Disabilities, (202) 245-2984.

SUPPLEMENTARY INFORMATION:**Part I. Introduction*****A. Goals of the Administration on Developmental Disabilities***

The Administration on Developmental Disabilities (ADD) is located within the Administration for Children and Families (ACF), Department of Health and Human Services (DHHS). Although different from the other ACF program administrations in the specific populations it serves, ADD shares a common set of goals:

- To increase family and individual self-sufficiency and independence through social and economic development strategies;
- To target Federal assistance to those most in need;
- To improve the effectiveness and efficiency of State and locally administered human services programs; and
- To improve the quality of ACF programs and services while encouraging innovation and choice through the marketplace.

Emphasis on these goals, and progress towards them will help more persons with developmental disabilities to live productive and independent lives, integrated into communities. It is through the Projects of National Significance Program that ADD attempts to promote the achievement of these goals.

Increased specialization, categorical programs, and the diversity of services and providers at the local level have increased the need for effective communication, networking, and cooperation among all concerned, particularly those at the level where services are delivered, to increase program effectiveness, maximize the use of existing resources, and avoid duplication or fragmentation of services. Program accountability and innovation are essential to more adequately address complex social issues and to help more individuals and families reduce their dependency.

The importance of identifying new ways to address the needs of individuals with developmental disabilities and their families is increasing as fiscal constraints strain the capacity of existing programs. ADD realizes that agencies serving persons with developmental disabilities must have access to innovations in a useable format. Therefore, in Fiscal Year 1991, ADD supports and encourages the dissemination and replication of project findings and models of successful innovations, and the transfer of

information and methods of successfully accessing services.

B. Purpose of the Administration on Developmental Disabilities

The Administration on Developmental Disabilities (ADD) is the lead agency within ACF and DHHS responsible for planning and administering programs which promote the self-sufficiency and protect the rights of persons with developmental disabilities.

The Developmental Disabilities Assistance and Bill of Rights Act of 1990 (42 U.S.C. 6000, et seq.) (the Act) supports and provides assistance to States and public and private nonprofit agencies and organizations to assure that all persons with developmental disabilities receive the services and other assistance and opportunities necessary to enable them to achieve their maximum potential through increased independence, productivity and integration into the community.

The Act emphasizes that persons with developmental disabilities include those with severe functional limitations attributable to physical impairments, mental impairments, and combinations of physical and mental impairments. It recognizes that, notwithstanding their severe disabilities, these persons have capabilities, competencies, and personal needs and preferences. Most importantly, the Act points out that a substantial portion of persons with developmental disabilities remain unserved or underserved.

The Act also stresses that the family and members of the community can play a central role in enhancing the lives of persons with developmental disabilities, especially when the family is provided with the necessary support services; that public and private employers tend to be unaware of the capability of persons with developmental disabilities to be engaged in competitive work in integrated settings; and that it is in the national interest to offer persons with developmental disabilities the opportunity to make decisions for themselves and to live in homes and communities where they can exercise their full rights and responsibilities as citizens.

In addition, in administering the Act at the Federal level, ADD seeks to enhance the role of the family in assisting persons with developmental disabilities to achieve their maximum potential (through self-advocacy and empowerment); in supporting the increasing ability of persons with developmental disabilities to perform leadership functions, and determine changes of their choice; as well as in

ensuring the protection of the legal and human rights of these individuals.

Programs funded under the Act are:

- Basic State formula grants;
- State system for the protection and advocacy of individual rights;
- Grants to University Affiliated Programs for interdisciplinary training, exemplary services, technical assistance, and information dissemination; and
- Grants for Projects of National Significance.

Part II. Background Information

A. Description of Projects of National Significance

Under part E of the Act, grants and contracts are awarded for projects of national significance to increase and support the independence, productivity, and integration into the community of persons with developmental disabilities, and to support the development of national and state policy which enhances the independence, productivity, and integration of these individuals. These projects may include, but are not limited to:

- Projects to conduct data collection and analysis;
- Projects to provide technical assistance to program components;
- Projects to provide technical assistance for the development of information and referral systems;
- Projects which improve supportive living and quality of life opportunities which enhance recreation, leisure and fitness;
- Projects to educate policymakers;
- Projects to pursue Federal interagency initiatives;
- Projects that support the enhancement of minority participation in public and private sector initiatives in developmental disabilities; and
- Other projects of sufficient size and scope, and which hold promise of expanding or otherwise improving opportunities for persons with developmental disabilities (especially those who are multihandicapped or disadvantaged, including minority groups, Native Americans, Native Hawaiians, and other underserved groups).

In addition, funds may be awarded for technical assistance and demonstration projects (including research, training, and evaluation in connection with such projects) which expand or improve the advocacy functions of the State Planning Councils, the functions performed by University Affiliated Programs and Satellite Centers, and the Protection and Advocacy System.

B. Comments on FY 1991 Proposed Priority Areas

On March 26, 1991, a notice soliciting comments on ADD's proposed priority areas for Fiscal Year 1991 Projects of National Significance was published in the *Federal Register*. A 60 day period was required to allow the public to comment on the proposed areas. After review and analysis of these comments, ADD is publishing its final priorities in this announcement.

ADD received a total of 41 letters and 96 individual comments. The majority of the comments expressed support of the priority areas. Other comments were supportive of the priority areas, but suggested changes.

Comments were submitted by the following:

- Advocacy Agencies which include national organizations, State Developmental Disabilities Councils, State advocacy groups, and local advocacy agencies;
- Service Organizations which include agencies which provide services for individuals with developmental disabilities as well as providing advocacy services on behalf of a particular handicapping condition;
- Educational Institutions which include universities, programs located within a university setting, University Affiliated Programs, and liberal arts colleges;
- Private Foundations; and
- Government Agencies which include Federal, State, county and local government agencies.

Few of the comments provided specific guidance on the development of the final priority areas. Rather, the majority were supportive of what ADD proposed in the announcement, elaborated on what was proposed, and/or recommended priorities relating to the mission of the particular agency submitting the comments, e.g., head injuries, cerebral palsy, epilepsy, etc.

The comments received were helpful in highlighting the concerns of the developmental disabilities field and have been used in refining the final priority areas.

Comment: Twelve comments recommended that ADD consider additional priority areas for FY 1991. Suggested priority areas included continuing the development of ongoing data bases; publishing Federal interagency priorities and providing an indication of the priority they would receive; funding information and referral projects with PNS monies; and funding other projects which focus on manpower needs assessment, attendant care, information dissemination, employment,

technological research, recreation and leisure, statewide systems change grants, and drug and alcohol abuse and its relationship to head injury in youth 15-22 years of age.

Response: ADD funded three ongoing data collection projects during the FY 1990 PNS funding cycle. Each of these grants was approved for two year funding. Therefore, ongoing data collection was not considered as a funding priority for FY 1991.

ADD is currently funding activities with the following agencies through interagency agreements: National Institute of Standards and Technology on Fire Safety in Board and Care Homes; Federal Interagency Coordinating Committee on funding services for children with disabilities; National Institute on Mental Health on advocacy services and programs for persons with developmental disabilities and mental illness; Health Resources Services Administration on minority health; and the Administration on Aging for elderly persons with developmental disabilities. ADD will consider including Federal interagency initiatives in future PNS announcements.

Information and referral (I&R) systems have been and continue to be an ongoing priority in ADD. Currently, ADD is participating in an I&R task force to determine the scope of work for the systems—whether nationally or regionally.

ADD appreciates the suggestions for additional priority areas for this fiscal year. However, new priority areas cannot be added at this point because of budget limitations. These recommendations will be considered during next year's public comment process.

Comment: ADD received 20 comments on Proposed Priority Area 1, Strengthening Families. One commenter provided several suggestions including: (1) Holding a national conference; (2) conducting national surveys instead of field research; (3) requiring grantees to address matters related to bureaucratic barriers and the professional re-education that would be needed to remove those barriers instead of addressing public awareness; and (4) requiring grantees to articulate their values, to demonstrate how their past and proposed activities are related to those values, as well as to indicate the consistency of those values and activities with ADD's initiative on strengthening families.

Response: The above comments are representative of the majority of the comments received in this priority area. We have considered these suggestions

in our revision of the final priority area. We have focused the final priority area on the replication of exemplary models and effective methods of communication rather than the conduct of field research; the dissemination of information on family support policies and programs; as well as the dissemination of innovative models for educating the public and increasing their awareness.

Comment: ADD received 17 comments on Priority Area 2, Youth Leadership Development. Most commenters expressed appreciation of the development of this particular priority area. They suggested that ADD focus on replicating existing models nationwide rather than using the "challenge grant" approach.

Response: The above comments are representative of the majority of the comments received in this priority area. We agree with the comments, and the final priority area will not be using the "challenge grant" approach.

Comment: ADD received 11 comments on Proposed Priority Area 3, Enhancement of Minority Participation in Public and Private Sector Initiatives in Developmental Disabilities. Most of the comments received on this priority area were supportive of a priority area that commenters believed met an important need in the developmental disabilities field, i.e., to recruit, train and retain minority professionals, students and faculty.

Response: The final priority reflects only minor changes as a result of these comments.

Comment: ADD received 15 comments on Proposed Priority Area 4, Home Ownership. Most commenters supported this priority area and suggested that we focus on the individual's control and choice over housing rather than on the person who may ultimately own a home.

Response: These comments are representative of the majority of the comments received in this priority area. As a result, the final priority area has been renamed to reflect these concerns and focuses specifically on individual control and choice.

Comment: ADD received 13 comments on Proposed Priority Area 5, Technical Assistance Projects. The majority of the comments were from advocacy agencies which reminded ADD of its legislative mandate to support the developmental disabilities program components in the provision of technical assistance to the field. Suggestions for this priority area ranged from the earmarked funding level of \$300,000 to having the program components compete amongst themselves rather than against each other.

Response: The technical assistance priority area is being announced as a separate ACF FY 1991 competitive procurement. The procurement action reflects the comments received in this priority area.

Comment: ADD also received eight general and supportive comments that ranged from focusing on other legislatively mandated activities to funding a variety of projects that relate specifically to the program goals and priorities of the particular agencies submitting the comments.

Response: These comments did not require changes to the priority areas.

Part 111. Fiscal Year 1991 Priority Areas for Projects of National Significance

The following section presents the final priority areas for Fiscal Year 1991 Projects of National Significance (PNS) and solicits the appropriate applications.

A. Priority Area Description

Each priority area description is composed of the following sections:

- **Eligible Applicants:** This section specifies the type of organization which is eligible to apply under the particular priority area. Specific restrictions are also noted, where applicable.

- **Purpose:** This section presents the basic focus and/or broad goal(s) of the priority area.

- **Background Information:** This section briefly discusses the legislative background, as well as the current state-of-the-art and/or current state-of-the-practice that supports the need for the particular priority area activity. Relevant information on projects previously funded by ADD and/or other State models are noted, where applicable. Some priority areas specify individuals to contact for more information.

- **Minimum Requirements for Project Design:** This section presents the basic set of issues that must be addressed in the application. Typically, they relate to project design, evaluation, and community involvement. This section also asks for specific information on the proposed project. Inclusion and discussion of these items is important since it will be used by the reviewers in evaluating the applications. Project products, continuation of the project effort after the Federal support ceases, and dissemination/utilization activities, if appropriate, are also addressed.

- **Project Duration:** This section specifies the maximum allowable length of time for the project period; it refers to the amount of time for which Federal funding is available.

- **Federal Share of Project Costs:** This section specifies the maximum amount of Federal support for the project.

- **Matching Requirement:** This section specifies the minimum non-Federal contribution, either through cash or in-kind match, that is required in proportion to the maximum Federal funds which can be requested for the project.

- **Anticipated Number of Projects To Be Funded:** This section specifies the number of projects that ADD anticipates it will fund in the priority area.

Please note that applicants that do not comply with the specific priority area requirements in the section on "Eligible Applicants" will not be included in the review process. Applicants should also note that non-responsiveness to the section "Minimum Requirements for Project Design" will result in a lower evaluation score by the panel of expert reviewers.

Applicants must clearly identify the specific priority area under which they wish to have their applications considered, and tailor their applications accordingly. Previous experience has shown that an application which is broader and more general in concept than outlined in the priority area description is less likely to score as well as one which is more clearly focused on and directly responsive to the concerns of that specific priority area.

B. Available Funds

ADD intends to award new grants resulting from this announcement during the fourth quarter of fiscal year 1991 and the first and second quarters of fiscal year 1992, subject to the availability of funding. The size of the actual awards will vary. Each priority area description includes information on the maximum Federal share of the project costs and the anticipated number of projects to be funded.

The term "budget period" refers to the interval of time (usually 12 months) into which a multi-year period of assistance (project period) is divided for budgetary and funding purposes. The term "project period" refers to the total time a project is approved for support, including any extensions.

ADD encourages applications seeking grant awards smaller than the allowable Federal maximum, or shorter in duration than the maximum project period, consistent with achieving the goals of the project.

For multi-year projects, continued Federal funding beyond the first budget period is dependent upon proof of satisfactory performance and the

availability of funds from future appropriations.

C. Grantee Share of Project Costs

Other than the exception described below, ADD does not make grant awards covering the entire project cost. Federal funds will be provided to cover up to 75% of the total allowable project costs. Therefore, the non-Federal share must amount to at least 25% of the total (Federal plus non-Federal) project cost. This means that for every \$3 in Federal funds received, up to the maximum amount allowable under each priority area, applicants must contribute at least \$1.

For example, the cost breakout for a project costing \$100,000 to implement would be:

Federal request	Non-Federal share	Total cost
\$75,000	\$25,000	\$100,000
75%.....	25%	100%

Exception: The exception to the grantee cost sharing requirement relates to applications originating from American Samoa, Guam, the Virgin Islands, Palau, and the Commonwealth of the Northern Mariana Islands. Applications from these areas are covered under section 501(d) of Public Law 95-134, which requires that the Department waive "any requirement for local matching funds under \$200,000."

The applicant contribution must always be secured from non-Federal sources, except for American Indian Tribes and Native American organizations. The non-Federal share of total project costs may be in the form of grantee-incurred costs and/or third party in-kind contributions. ADD strongly encourages applicants to propose a grantee share that is more than 25% of total project costs. ADD also encourages applicants to meet their match requirement through a cash contribution, as opposed to an in-kind contribution. For further information on in-kind contributions, refer to the instructions for completing the SF 424A—Budget Information, in part V.

The required amount of non-Federal share to be met by the applicant is the amount indicated in the approved application. Grant recipients will be required to provide the agreed upon non-Federal share, even if this exceeds 25% (or other required portion) of the project costs. Therefore, an applicant should ensure any amount proposed as match prior to inclusion in its budget.

The non-Federal share must be met by a grantee during the life of the project.

Otherwise, ADD will disallow any unmatched Federal funds.

D. Closed Captioning for Audiovisual Efforts

Applicants are encouraged to include "closed captioning" in the development of any audiovisual products.

E. Projects of National significance (PNS) Priority Areas

Fiscal Year 1991 Priority Area 1: Strengthening Families

- Eligible Applicants: State, public or private nonprofit organizations, institutions or agencies.

- Purpose: To provide information to policymakers and to parents and families of individuals with developmental disabilities on successfully accessing the necessary services and service systems to increase their independence, productivity and self-sufficiency.

- Background Information: Parents and families of persons with developmental disabilities are speaking out to service systems administrators and policymakers to assure that their family needs are supported. Families are being recognized as competent primary caregivers who face extraordinary challenges requiring community and policy support. Through a number of initiatives in several states, we are learning that family support is an attitude, not a program, and that families know best what they need. These initiatives facilitate the empowerment of families and activate their increasing individual and collective involvement in decision making resulting in an increase in independence, productivity and integration into the community. Much is already known about "what works" in family support. Many state and communities are already demonstrating its effectiveness. Examples of successful projects that ADD has funded include:

- Human Services Research Institute: Educating Policymakers and Empowering Families (Valerie Bradley: 617/876-0426)

- World Institute on Disability: Increasing the Advocacy Capacity of State Developmental Disabilities Councils (Edward Roberts: 415/486-8314)

- People First of Washington: People First of Washington Self-Advocacy Project (Bob Furman: 206/272-2811)

- Minnesota State Planning Agency: Partnerships with Policymakers: Promoting Self-Advocacy and Empowerment of Families (Colleen Wieck: 612/296-9964).

What has been documented to date is that "family support must be construed as a flexible and varied network of supports that can accommodate individual family concerns. Moreover, to be most effective, family supports must be administered in ways that enable and empower families and persons with disabilities to maintain or regain control over their own lives and the lives of their families. It seems central to achieving this goal that the supports offered to families must be administered so that they are family centered, culturally sensitive, community-centered, and well coordinated." (Human Services Research Institute, Cambridge, MA) Therefore, ADD is focusing its efforts on the collection and sharing of state-of-the-art practices and on the dissemination of workable policy and funding strategies.

- *Minimum Requirements for Project Design:* In order to successfully compete under this priority area, the application must over the two year project period:

- Propose to establish a national repository of information on family support approaches, strategies, and issues that would identify existing models of excellence; serve an information dissemination function by translating the wealth of information on current issues relating to self-advocacy and empowerment into materials that can be used by parents/parent groups, as well as other audiences; and provide information on replicating exemplary family support activities. Project activities would include:

- Identification of exemplary models/models for replication that establish, at the local level, effective methods of communication and cooperative working relationships between the local service system and the families of persons with developmental disabilities in the provision of individualized family support services;

- Development of a set of quality indicators for family support;

- Dissemination of information to multiple audiences on self-advocacy and empowerment issues;

- Dissemination of information on innovative funding mechanisms for family supports which take into account budgetary constraints that are likely to persist throughout the decade;

- Dissemination of innovative models and methods for educating and increasing the public's awareness of family support services and issues; and

- Transfer/dissemination of information to states, organizations, and groups to

initiate or enhance family-driven supports in their state and to assist in educating policymakers on best practices and funding strategies for family support.

- Describe an evaluation component which will measure the project's effectiveness in achieving desired objectives.
- Describe the plan for dissemination and utilization of project activities, and/or replication of project findings.

• Provide a specific public awareness plan focusing on activities to enlighten and increase the public's awareness of programs and services related to families and individuals with developmental disabilities.

(Every effort will be made by ADD to coordinate the activities under this priority area with those of the Department of Education.)

• *Project Duration:* The length of the project must not exceed 24 months.

• *Federal Share of Project Costs:* The maximum Federal share is not to exceed \$200,000 for the first 12-month budget period or a maximum of \$400,000 for a 2-year project period.

• *Matching Requirement:* The minimum non-Federal matching requirement in proportion to the maximum Federal share of \$400,000 is \$133,333 for a 2-year project period. This constitutes 25 percent of the total project budget.

• *Anticipated Number of Projects to be Funded:* It is anticipated that at least one national family support project will be funded.

Fiscal Year 1991 Priority Area 2: Youth Leadership Development

• *Eligible Applicants:* State, public or private nonprofit organizations, institutions or agencies.

• *Purpose:* To develop exemplary models of youth leadership programs which focus on issues related to young adults with developmental disabilities.

• *Background Information:* The growth of community-based residential programs for persons with developmental disabilities has resulted in an ever-increasing demand for trained personnel to provide a wide spectrum of services to this population. This growth has created intense competition in recruiting capable and qualified staff with and without a developmental disability to provide services for new and existing community-based programs. Recruitment and retention of trained personnel is one of the most critical and well documented problems facing the community-based service delivery system today. This great need for trained personnel makes it necessary to recruit persons from educational

environments. High school students with and without a developmental disability are often unaware of the wide variety of employment options in the human services field. High school counselors are overwhelmed with vocational and college referrals and are often unable to give students guidance around career options in the field of developmental disabilities. Increased awareness of opportunities in the field may be successful in persuading high school students to pursue professional or paraprofessional careers providing services to people with developmental disabilities. Therefore, a particular focus of this priority area will be to increase the number of professionals with and without a developmental disability in the full array of disciplines which provide services to people with developmental disabilities.

• *Minimum Requirements for Project Design:* In order to successfully compete under this priority area, the application must cover the three year project period:

• Provide evidence of collaboration with the private sector, state and local businesses, or foundations by way of personnel, donated space, etc. and/or funds;

• Provide evidence of collaboration with state or local school jurisdictions willing to participate in this activity;

• Describe how the project will establish a youth leadership curriculum that would focus on the Americans with Disabilities Act, advocacy issues, educating policymakers (self-advocacy and empowerment), service provision, etc., as these issues relate to the needs, concerns and expectations of young adults with developmental disabilities for increased independence, productivity, and integration;

• Describe how the project will develop a national state network of youth groups that would serve as informed youth leaders (with and without a developmental disability), role models/mentors, and as a support network to other young adults with and without developmental disabilities.

• Describe how this project will build upon existing training programs currently being implemented within applicant's service area;

• Provide evidence of a needs assessment documenting shortages in direct care personnel in the particular geographic locale to be served by this project;

• Describe innovative recruitment and training models to be implemented including goals and objectives of the project;

• Document applicant's expertise and previous experience in curricula

development and training of paraprofessionals;

• Document applicant's expertise and previous experience in curricula development and training of professionals preparing for or currently employed serving people with developmental disabilities;

• Describe job referral and placement strategies for high school students completing the training; and

• Describe an evaluation component which will measure the project's effectiveness in achieving desired objectives.

• Describe the plan for dissemination and utilization of project activities, and/or replication of project findings.

• *Project Duration:* The length of the project must not exceed 36 months.

• *Federal Share of Project Costs:* The maximum Federal share is not to exceed \$100,000 for the first 12-month budget period or a maximum of \$300,000 for a 3-year project period.

• *Matching Requirement:* The minimum non-Federal matching requirement in proportion to the maximum Federal share of \$300,000 is \$100,000 for a 3-year project period. This constitutes 25 percent of the total project budget.

• *Anticipated Number of Projects to be Funded:* It is anticipated that at least one project will be funded.

Fiscal Year 1991 Priority Area 3:

Enhancement of Minority Participation in Public and Private Sector Initiatives in Developmental Disabilities

• *Eligible Applicants:* State, public or private nonprofit organizations, institutions or agencies.

• *Purpose:* To ensure the integration and active participation of minority professionals within the national and state developmental disabilities training and service network.

• *Background Information:* Minority populations are underrepresented in the health, education, and human service professions, and within personnel preparation programs that prepare personnel to assume leadership roles at the state and national levels of the human service delivery systems and to provide direct services to people with developmental disabilities. The underrepresentation of minorities in these fields is significant because it influences the quality and availability of services to both minority and non-minority children and adults with developmental disabilities. Most minority and non-minority faculty and service providers lack the knowledge, skills and motivation needed to create multi-cultural service and training

environments that encourage the participation of all minority populations in leadership roles. The recruitment and retention of minority faculty and students to the developmental disabilities network is critical to address the growing personnel shortages in the field of developmental disabilities. In addition, racial and ethnic leaders from all minority groups and sub-groups are needed within the developmental disabilities service and training network to actively participate in the formulation of policies, exemplary program service models, and disciplinary and interdisciplinary training programs. Today, the participation of minority faculty and health professionals is a matter of economic necessity and broadened efforts are needed to increase the representation of all minority groups on our college and university campuses and particularly within the health professions.

The second component of this priority area focuses on supporting programs which provide sensitivity training for professionals who work with minorities with developmental disabilities from multi-cultural areas across the age-span. The cultural sensitivity training would provide to the state agencies information that could influence policy and impact legislation and funding for services which would actively include minorities with special needs.

- *Minimum Requirements for Project Design:* In order to successfully compete under this priority area, the application must cover the three year project period:

- Describe how the project will develop, implement and evaluate model programs designed to recruit and retain minority faculty and students at institutions of higher education that prepare personnel to work in the field of developmental disabilities;

- Provide a plan to initiate training programs designed to ensure the participation of minority professionals in the developmental disabilities service network;

- Facilitate the dissemination of information, and the promotion of minority leadership and multicultural environments in the developmental disabilities training and service system. This would also include the collection and dissemination of successful approaches to recruit, train and retain minority volunteers in community-based developmental disabilities service and advocacy agencies.

- Describe an evaluation component which will measure the project's effectiveness in achieving desired objectives.

- Describe the plan for dissemination and utilization of project activities, and/or replication of project findings.

- Provide a specific public awareness plan focusing on activities to enlighten and increase the public's awareness of programs and services related to families and individuals with developmental disabilities.

- *Project Duration:* The length of the project must not exceed 36 months.

- *Federal Share of Project Costs:* The maximum Federal share is not to exceed \$100,000 for the first 12-month budget period or a maximum of \$300,000 for a 3-year project period.

- *Matching Requirement:* The minimum non-Federal matching requirement in proportion to the maximum Federal share of \$300,000 is \$100,000 for a 3-year project budget. This constitutes 25 percent of the total project period.

- *Anticipated Number of Projects to be Funded:* It is anticipated that at least one project will be funded.

Fiscal Year 1991 Priority Area 4: A Home Of One's Own

- *Eligible Applicants:* State, public or private nonprofit organizations, institutions or agencies.

- *Purpose:* To address the question of how we can better respond to the housing needs of Americans with developmental disabilities.

- *Background Information:* For over 20 years, the major thrust of residential services has been to increase the community housing of persons with developmental disabilities. Unfortunately, this process has not assured that persons with developmental disabilities will be afforded control over or even a voice in the most basic housing decisions (e.g., where they live, with whom they live, how they will enjoy their "private" life). Despite the major accomplishments in community housing and services for persons with developmental disabilities, most remain "guests" in their own "homes," subject to the rules, schedules, dictates, tastes and prejudices of others.

Like others in their culture, most people with developmental disabilities want and need a home of their own; a place where they can be themselves, where they can choose to do what they want, when they want, with whom they want. Choosing and controlling one's home is a basic act of personal autonomy. ADD recognizes this act of personal autonomy as a fundamental aspect of the agency's responsibility to promote independence and community integration. Unfortunately, the administrative structures supporting community services typically promote

congregate approaches to community residential and related services. Housing and residential supports are far more often dictated by government and provider agencies than by the preferences and needs of persons with developmental disabilities.

ADD seeks to foster new and expanded approaches to community housing that are more culturally consistent with having "a home of one's own." We have consulted with the Office of Elderly and Assisted Housing, the Office for Fair Housing and Equal Opportunity, and others in the Department of Housing and Urban Development to accomplish this aim. Minimally, such approaches will separate where one lives from the services and supports one receives, with the determination of services and supports needed tailored to the individual's preferred residence, whether that be his/her purchased home, the family home, a rented apartment, or some form of shared housing. Among the services needed by persons with developmental disabilities, their families and others in securing a "home" are included: (1) Advice and assistance in developing, buying, renting, or otherwise securing housing, including the use of Federal, state and local mortgage subsidies, property acquisition and rehabilitation funds, rental assistance vouchers and certificates, tax credits, housing trust funds, etc., methods of selecting economically and personally appropriate housing and the means and approaches to maintaining and/or modifying that property as needed; and (2) a means of determining and providing the specific services and supports needed and desired by the individual in his/her home and assuring that those services meet and continue to meet the individual's needs for health and safety, social and family relationships, and community participation.

- *Minimum Requirements for Project Design:* In order to successfully compete under this priority area, the application must cover the three year project period:

- Provide an overview of a range of approaches to securing consumer-controlled housing, including major existing governmental and private assistance programs, models of collective or individual housing development and/or mortgage financing and rental assistance, and existing sources of information, referral, exemplary practice and technical expertise on such topics;

- Indicate an understanding of specific challenges of having a "home of

one's own" under existing models of providing and financing residential services for persons with developmental disabilities and outline specific existing or hypothesized strategies to respond to these challenges:

- Describe the applicant's specific definition of and standards for a "home of one's own" and how those standards would be used to assist persons with developmental disabilities and their families in evaluating different housing options/strategies for persons with different assets, family involvements, personal care and/or supervision needs, lifestyles, etc.

- Describe a specific demonstration project(s) involving the provision and support of personalized, consumer-controlled housing for at least 25 "target" individuals with developmental disabilities, and including family members, necessary government housing and program agencies, service providing agencies, cooperating advocacy, evaluation and other agencies that will: (a) Provide or finance housing and appropriate personalized services for the target individuals; (b) describe in individual case studies as well as appropriate quantitative summary statistics the process, outcomes, problems and other relevant information on the demonstration activities; and (c) assess the effectiveness of these efforts to meet specific group and individual objectives identified in the proposal. Target population recruitment and selection, the variety of financing options likely to be tested, the range of services and supports to be available should also be described.

- Describe an approach to developing a high quality "housing manual" that describes comprehensively the options for securing and supporting personalized housing, methods of assisting individuals, families and interested agencies in obtaining appropriate housing, the outcomes of efforts to assist people in having homes of their own and sources of information, referral, exemplary practice and technical expertise on consumer-controlled housing, and other information relevant to increasing the numbers of people with developmental disabilities who have homes of their own through ownership, rental or other arrangements.

- Describe a comprehensive dissemination program, including broad dissemination of the "housing manual," and other dissemination activities to appropriate public and private agencies, advocacy organizations, and other audiences with potential roles in increasing housing opportunities for people with developmental disabilities.

- Provide evidence of collaboration with local housing agencies, builders, developers, etc.;

- Identify solutions to barriers (fiscal, policy and programmatic) to individualized housing.

- Describe an evaluation component which will measure the project's effectiveness in achieving desired objectives.

- Provide a specific public awareness plan focusing on activities to enlighten and increase the public's awareness of programs and services related to families and individuals with developmental disabilities.

- *Project Duration:* The length of the project must not exceed 36 months.

- *Federal Share of Project Costs:* The maximum Federal share is not to exceed \$100,000 for the first 12-month budget period or a maximum of \$300,000 for a 3-year project period.

- *Matching Requirement:* The minimum non-Federal matching requirement in proportion to the maximum Federal share of \$300,000 is \$100,000 for a 3-year project period. This constitutes 25 percent of the total project budget.

- *Anticipated Number of Projects to be Funded:* It is anticipated that at least one project will be funded.

Fiscal Year 1991 Priority Area 5: Technical Assistance Projects

Under a separate contractual solicitation (RFC 105-91-7008), ADD will provide support for technical assistance to improve the functions of the Developmental Disabilities Council and the Protection and Advocacy System.

Part IV. The Application Process

A. Eligible Applicants

Before applications are reviewed, each application will be screened to determine that the applicant organization is an eligible applicant as specified under the selected priority area. Applications from organizations which do not meet the eligibility requirements for the priority area will not be considered or reviewed in the competition and the applicant will be so informed.

Each priority area description contains information about the types of organizations which are eligible to apply under that priority area. Only that type of organization is eligible to apply under that particular priority area. In general, for Projects of National Significance, only State, public or private nonprofit organizations, institutions or agencies are eligible to apply for funds.

Only organizations, not individuals, are eligible to apply under any of the

priority areas. On all applications developed jointly by more than one organization, the applicant must identify only one organization as the lead organization and official applicant. The other participating organizations can be included as co-participants, subgrantees, or subcontractors.

Any non-profit agency which has not previously received ADD support must submit proof of non-profit status with its grant application. The non-profit agency can accomplish this by either making reference to its listing in the Internal Revenue Service's (IRS) most recent list of tax-exempt organizations or submitting a copy of its letter from the IRS under IRS Code section 501(c)(3). ADD cannot fund a non-profit applicant without acceptable proof of its status.

B. Review Process and Funding Decisions

Applications that are submitted by the deadline date and are from eligible applicants will be reviewed and scored competitively. Experts in the field of developmental disabilities (generally persons from outside of the Federal Government), advocates, state and service agency representatives, as well as consumers will use the evaluation criteria listed later in this part to review and score the applications. The results of this review are a primary factor in making funding decisions.

ADD reserves the option of discussing applications with, or referring them to, other Federal or non-Federal funding sources when this is determined to be in the best interest of the Federal Government or the applicant. ADD may also solicit comments from other Federal agencies, Central and Regional Office staff, interested foundations, national organizations, specialists, experts, States and the general public. These comments, along with those of the expert reviewers, are considered by the Assistant Secretary for Children and Families and the ADD Commissioner in making funding decisions.

In making decisions on awards, the Assistant Secretary and the ADD Commissioner may give preference to applications which focus on or feature: Minority populations; a substantially innovative strategy with the potential to improve theory or practice in the field of human services; a model practice or set of procedures that holds the potential for utilization by organizations involved in the administration or delivery of human services; substantial involvement of volunteers; substantial involvement (either financial or programmatic) of the private sector; a favorable balance between Federal and non-Federal funds

available for the proposed project; the potential for high benefit for low Federal investment; a programmatic focus on those most in need; and/or substantial involvement in the proposed project by national or community foundations.

To the greatest extent possible, efforts will be made to ensure that funding decisions reflect an equitable distribution of assistance among the States and geographical regions of the country, rural and urban areas, and ethnic populations. In making these decisions, the Assistant Secretary and ADD Commissioner may also take into account the need to avoid unnecessary duplication of effort.

C. Evaluation Criteria

The evaluation criteria correspond to the outline for the development of the Program Narrative Statement of the application. Applications will be reviewed by a panel of at least three non-Federal reviewers using the criteria below. Applicants should assure that they address each minimum requirement in the priority area description under the appropriate section of the Program Narrative Statement.

Reviewers will determine the strengths and weaknesses of each proposal in terms of the four evaluation criteria listed below, provide comments and assign numerical scores accordingly. The point value following each criterion heading indicates the maximum numerical weight that each section will be given in the review process.

1. Objectives and Need for Assistance (20 Points)

The application pinpoints any relevant physical, economic, social, financial, institutional, or other problems requiring a solution; demonstrates the need for the assistance; states the principal and subordinate objectives of the project; provides supporting documentation or other testimonies from concerned interests other than the applicant; and includes and/or footnotes relevant data based on the results of planning studies. It identifies the precise location of the project and area to be served by the proposed project. Maps and other graphic aids may be attached.

2. Results or Benefits Expected (20 Points)

The application identifies the results and benefits to be derived, the extent to which they are consistent with the objectives of the proposal and indicates the anticipated contributions to policy, practice, theory and/or research. The

proposed project costs are reasonable in view of the expected results.

3. Approach (35 Points)

The application outlines a sound and workable plan of action pertaining to the scope of the project and details how the proposed work will be accomplished; cites factors which might accelerate or decelerate the work, giving acceptable reasons for taking this approach as opposed to others; describes and supports any unusual features of the project, such as design or technological innovations, reductions in cost or time, or extraordinary social and community involvements; and provides for projections of the accomplishments to be achieved. It lists the activities to be carried out in chronological order, showing a reasonable schedule of accomplishments and target dates.

To the extent applicable, the application identifies the kinds of data to be collected and maintained, and discusses the criteria to be used to evaluate the results and successes of the project. It describes the evaluation methodology that will be used to determine if the needs identified and discussed are being met and if the results and benefits identified are being achieved. The application also lists each organization, agency, consultant, or other key individuals or groups who will work on the project, along with a description of the activities and nature of their effort or contribution.

4. Staff Background and Organization's Experience (25 Points)

The application identifies the background of the project director/principal investigator and key project staff (including name, address, training, educational background, and other qualifying experience) and the experience of the organization to demonstrate the applicant's ability to effectively and efficiently administer this project. The application describes the relationship between this project and other work planned, anticipated or underway by the applicant with Federal assistance.

Part V. Instructions for the Development and Submission of Applications

This Part contains information and instructions for submitting applications in response to this announcement. Application forms are provided along with a checklist for assembling an application package. Please copy and use these forms in submitting an application.

Potential applicants should read this section carefully in conjunction with the information contained within the

specific priority area under which the application is to be submitted. The priority area descriptions are in part III.

A. Waiver of Executive Order 12372 Requirements for a 60-Day Comment Period for the States' Single Point of Contact

This program is covered under Executive Order (E.O.) 12372, "Intergovernmental Review of Federal Programs," and 45 CFR part 100, "Intergovernmental Review of Department of Health and Human Services Programs and Activities." Under the Order, States may design their own processes for reviewing and commenting on proposed Federal assistance under covered programs.

All States and territories, except Alaska, Idaho, Kansas, Louisiana, Minnesota, Nebraska, Virginia, American Samoa and Palau, have elected to participate in the Executive Order process and have established a Single Point of Contact (SPOCs). Applicants from these areas need take no action regarding E.O. 12372. Applications for projects to be administered by Federally-recognized Indian Tribes are also exempt from the requirements of E.O. 12372.

Other applicants should contact their SPOC as soon as possible to alert them of the prospective application and receive any necessary instructions. Applicants must submit any material to the SPOC as early as possible so that the program office can obtain and review SPOC comments as part of the award process. It is imperative that the applicant submit all required materials to the Single Point of Contact (SPOC) and indicate the date of this submittal (or date SPOC was contacted, if no submittal is required) on the SF 424, item 16a. SPOCs will be notified of any applicant not indicating SPOC contact on the application, when SPOC contact is required.

ADD must obligate the funds for these awards by the end of the fiscal year. Therefore, the required 60-day comment period for State process review and recommendation has been reduced and will end on September 27, 1991, in order for ADD to receive, consider, and accommodate SPOC input.

SPOCs are encouraged to eliminate the submission of routine endorsements as official recommendations. Additionally, SPOCs are requested to differentiate clearly between mere advisory comments and those official State process recommendations which they intend to trigger the "accommodate or explain" rule.

When comments are submitted directly to ADD, they should be addressed to Department of Health and Human Services, ACF/Grants and Contracts Management Division, 200 Independence Avenue, SW., room 341-F, Washington, DC 20201, attn: ACF-ADD-91-04. Contact information for each State's SPOC is found at the end of this announcement.

B. Notification of State Developmental Disabilities Councils

A copy of the application must also be submitted for review and comment to the State Developmental Disabilities Council in each state in which the applicant's project will be conducted. A list of the State Developmental Disabilities Councils is included at the end of this announcement.

C. Paperwork Reduction of 1990

Under the Paperwork Reduction Act of 1980, Public Law 96-511, the Department is required to submit to the Office of Management and Budget (OMB) for review and approval any reporting and recordkeeping requirements in proposed or final regulations, including program announcements. This program announcement does not contain information collection requirements beyond those approved by OMB.

D. Closing Date for Receipt of Applications

The closing date for submittal of applications under this program announcement is August 29, 1991.

1. Deadline

Applications shall be considered as meeting the deadline if they are either:

- a. Received on or before the deadline date at the ACF Grants and Contracts Management Office; or
- b. Sent on or before the deadline date and received by the granting agency in time for them to be considered during the competitive review and evaluation process under chapter 1-62 of the Health and Human Services Grants Administration Manual. (Applicants are cautioned to request a legibly dated U.S. Postal Service postmark or to obtain a legibly dated receipt from a commercial carrier or the U.S. Postal Service. Private metered postmarks are not acceptable as proof of timely mailing.)

2. Applications Submitted by Other Means

Applications which are not submitted in accordance with the above criteria shall be considered as meeting the deadline only if they are physically received before the close of business on

or before the deadline date. Hand-delivered applications will be accepted at the ACF Grants and Contracts Management Division during the normal working hours of 9 a.m. to 5:30 p.m., Monday through Friday.

3. Late Applications

Applications which do not meet these criteria are considered late applications. The ACF Grants and Contracts Management Division will notify each late applicant that its application will not be considered in this competition.

4. Extension of Deadline

ADD reserves the right to extend the deadline for all applicants due to acts of God, such as floods, hurricanes or earthquakes; if there is widespread disruption of the mail; or if ADD determines a deadline extension to be in the best interest of the Government. However, ADD will not waive or extend the deadline for any applicant unless the deadline is waived or extended for all applicants.

E. Instructions for Preparing the Application and Completing Application Forms

The SF 424, SF 424A, SF 424B and certifications have been reprinted for your convenience in preparing the application. You should reproduce single-sided copies of these forms from the reprinted forms in the announcement, typing your information onto the copies. Please do not use forms directly from the *Federal Register* announcement, as they are printed on both sides of the page.

In order to assist applicants in correctly completing the SF 424, and SF 424A, a sample of completed forms has been included at the end of part V of this announcement. This sample is to be used only as a guide for submitting your application.

Where specific information is not required under this program, N/A (not applicable) has been preprinted on the form.

Please prepare your application in accordance with the following instructions:

1. SF 424 Page 1. Application Cover Sheet

Please read the following instructions before completing the application cover sheet. An explanation of each item is included. Complete only the items specified.

Top of Page. Enter the single priority area number under which the application is being submitted. An application should be submitted under only one priority area.

Item 1. "Type of Submission"—Enter "Non-construction".

Item 2. "Date Submitted" and "Applicant Identifier"—Date application is submitted to HDS and applicant's own internal control number, if applicable.

Item 3. "Date Received By State"—State use only (if applicable).

Item 4. "Date Received by Federal Agency"—Leave blank.

Item 5. "Applicant Information"

"Legal Name"—Enter the legal name of applicant organization. For applications developed jointly, enter the name of the lead organization only. There must be a single applicant for each application. Use abbreviations to limit the organization name to 50 characters, including spaces and punctuation.

"Organizational Unit"—Enter the name of the primary organizational unit which will actually carry out the project activity. Do not use the name of an individual as the applicant. If this is the same as the applicant organization, leave the organizational unit blank. Use abbreviations to limit this line to 30 characters, including spaces and punctuation.

"Address"—Enter the complete address that the organization actually uses to receive mail, since this is the address to which all correspondence will be sent. Do not include both street address and P.O. Box number unless both must be used in mailing.

"Name and telephone number of the person to be contacted on matters involving this application (give area code)"—Enter the name and telephone number of a person who can respond to questions about the application. This person should be accessible at the address given here.

Item 6. "Employer Identification Number (EIN)"—Enter the employer identification number of the applicant organization, as assigned by the Internal Revenue Service, including if known the Central Registry System suffix.

Item 7. "Type of Applicant"—Self-explanatory.

Item 8. "Type of Application"—Enter "New".

Item 9. "Name of Federal Agency"—Enter "DHHS, ACF, Administration on Developmental Disabilities".

Item 10. "Catalog of Federal Domestic Assistance Number"—Enter "93.631—Developmental Disabilities Projects of National Significance".

Item 11. "Descriptive Title of Applicant's Project"—Enter the project title. The title is generally short. It should be no more than 200 characters long, including spaces and punctuation.

and should be typed in not more than four lines of 50 characters each. Use a short title which is descriptive of the project, not the priority area title.

Item 12. "Areas Affected by Project"—Enter the governmental unit where significant and meaningful impact could be observed. List only the largest unit or units affected, such as State, county, or city. If an entire unit is affected, list it rather than subunits.

Item 13. "Proposed Project"—Enter the starting date for the project, beginning September 1 through September 30, 1991, and the proposed completion date for the project. Applicants are advised to allow themselves an additional 2-3 months start-up time beyond September 1991 in order to avoid the need for requesting an extension at a later date. Projects may not exceed the maximum duration specified in the priority area description, generally between 12 to 36 months.

Item 14. "Congressional District of Applicant/Project"—Enter the number of the Congressional District where the applicant's principal office is located and the number of the Congressional district(s) where the project will be located. If Statewide, a multi-State effort, or nationwide, enter "00."

Items 15a-q. "Estimated Funding"—Enter the amounts requested or to be contributed by Federal and non-Federal sources for the total project period, if the project period is 17 months or less. If the proposed project period exceeds 17 months, enter the budget for the first 12 months only.

Item 15a. "Estimated Funding—Federal"—Enter the amount of Federal funds requested. This amount should be no greater than the maximum amount specified in the priority area description.

Items 15b-e. "Estimated Funding—Applicant, State, local, other"—Enter the amount(s) of funds from non-Federal sources that will be contributed to the proposed project. These items (b-e) are considered cost-sharing or "matching funds." The value of third party in-kind contributions should be included on appropriate lines as applicable. For more information regarding funding as well as exceptions to these rules, see part II, sections E and F and the specific priority area description.

Item 15f. "Estimated Funding—Program Income"—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount entered under item 15g. Describe the nature, source and anticipated use of this income in the Project Narrative Statement.

Item 15g. "Estimated Funding—Total"—Enter the sum of items 15a-15e.

Item 16a. "Is Application Subject to Review By State Executive Order 12372 Process? Yes."—Enter the date the applicant contacted the SPOC regarding this application. Select the appropriate SPOC from the listing provided at the end of Part V. Review of the application is at the discretion of the SPOC. The SPOC will verify the date noted on the application. If there is a discrepancy in dates, the SPOC may request that the Federal agency delay any proposed funding until the full review time of 30 days is afforded.

Item 16b. "Is Application Subject to Review By State Executive Order 12372 Process? No."—Check the appropriate box if the application is not covered by E.O. 12372 or if the program has not been selected by the State for review.

Item 17. "Is the Applicant Delinquent on any Federal Debt?"—Check the appropriate box. This question applies to the applicant organization, not the person who signs as the authorized representative. Categories of debt include audit disallowances, loans and taxes.

Item 18. "To the best of my knowledge and belief, all data in this application preapplication are true and correct. The document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is awarded."—To be signed by the authorized representative of the applicant. A copy of the governing body's authorization for signature of this application by this individual as the official representative must be on file in the applicant's office. It may be requested.

Item 18a-c. "Typed Name of Authorized Representative, Title, Telephone Number"—Enter the name, title and telephone number of the authorized representative of the applicant organization.

Item 18d. "Signature of Authorized Representative"—Signature of the authorized representative named in Item 18a. At least one copy of the application must have an original signature. Use colored ink (not black) so that the original signature is easily identified.

Item 18e. "Date Signed"—Enter the date the application was signed by the authorized representative.

2. SF 424A—Budget Information—Non-Construction Programs

This is a form used by many Federal agencies. For this application, sections A, B, C, and E are to be completed. Section D does not need to be completed.

Sections A and B should include the Federal as well as the non-Federal

funding for the proposed project covering (1) the total project period of 17 months or less or (2) the first year budget period, if the proposed project period exceeds 17 months.

Section A—Budget Summary. This section includes a summary of the budget. On line 5, enter total Federal costs in column (e) and total non-Federal costs, including third party in-kind contributions, but not program income, in column (f). Enter the total of (e) and (f) in column (g).

Section B—Budget Categories. This budget, which includes the Federal as well as non-Federal funding for the proposed project, covers (1) the total project period of 17 months or less or (2) the first-year budget period if the proposed project period exceeds 17 months. It should relate to item 15g, total funding, on the SF 424. Under column (5), enter the total requirements for funds (Federal and non-Federal) by object class category.

A separate budget justification should be included to explain fully and justify major items, as indicated below. The types of information to be included in the justification are indicated under each category. The budget justification should immediately follow the table of contents.

Personnel—Line 6a. Enter the total costs of salaries and wages of applicant/grantee staff. Do not include the costs of consultants, which should be included on line 6h, "Other."

Justification: Identify the principal investigator or project director, if known. Specify by title or name the percentage of time allocated to the project, the individual annual salaries, and the cost to the project (both Federal and non-Federal) of the organization's staff who will be working on the project.

Fringe Benefits—Line 6b. Enter the total costs of fringe benefits, unless treated as part of an approved indirect cost rate.

Justification: Provide a break-down of amounts and percentages that comprise fringe benefit costs, such as health insurance, FICA, retirement insurance, etc.

Travel—6c. Enter total costs of out-of-town travel (travel requiring per diem) for staff of the project. Do not enter costs for consultant's travel or local transportation, which should be included on Line 6h, "Other."

Justification: Include the name(s) of traveler(s), total number of trips, destinations, length of stay, transportation costs and subsistence allowances.

Equipment—Line 6d. Enter the total costs of all equipment to be acquired by

the project. For State and local governments, including Federally recognized Indian Tribes, "equipment" is non-expendable tangible personal property having a useful life of more than two years and an acquisition cost of \$5,000 or more per unit. For all other applicants, the threshold for equipment is \$500 or more per unit. The higher threshold for State and local governments became effective October 1, 1988, through the implementation of 45 CFR part 92, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and local Governments.

Justification: Equipment to be purchased with Federal funds must be justified. The equipment must be required to conduct the project, and the applicant organization or its subgrantees must not have the equipment or a reasonable facsimile available to the project. The justification also must contain plans for future use or disposal of the equipment after the project ends.

Supplies—Line 6e. Enter the total costs of all tangible expendable personal property (supplies) other than those included on Line 6d.

Justification: Specify general categories of supplies and their costs.

Contractual—Line 6f. Enter the total costs of all contracts, including (1) procurement contracts (except those which belong on other lines such as equipment, supplies, etc.) and (2) contracts with secondary recipient organizations, including delegate agencies. Also include any contracts with organizations for the provision of technical assistance. Do not include payments to individuals on this line. If the name of the contractor, scope of work, and estimated total costs are not available or have not been negotiated, include on line 6h, "Other."

Justification: Attach a list of contractors, indicating the names of the organizations, the purposes of the contracts, and the estimated dollar amounts of the awards as part of the budget justification. Whenever the applicant/grantee intends to delegate part or all of the program to another agency, the applicant/grantee must complete this section (section B, Budget Categories) for each delegate agency by agency title, along with the supporting information. The total cost of all such agencies will be part of the amount shown on line 6f. Provide backup documentation identifying the name of contractor, purpose of contract, and major cost elements.

Construction—Line 6g. Leave blank. New construction is not allowable.

Other—Line 6h. Enter the total of all other costs. Where applicable, such

costs may include, but are not limited to: Insurance; medical and dental costs; noncontractual fees and travel paid directly to individual consultants; local transportation (all travel which does not require per diem is considered local travel); space and equipment rentals; printing and publication; computer use; training costs, including tuition and stipends; training service costs, include wage payments to individuals and supportive service payments; and staff development costs. Note that costs identified as "miscellaneous" and "honoraria" are not allowable.

Justification: Specify the costs included.

Total Direct Charges—Line 6i. Enter the total of Lines 6a through 6h.

Indirect Charges—6j. Enter the total amount of indirect charges (costs). If no indirect costs are requested, enter "none." Generally, this line should be used when the applicant (except local governments) has a current indirect cost rate agreement approved by the Department of Health and Human Services or another Federal agency.

Local and State governments shall enter the amount of indirect costs determined in accordance with HHS requirements. When an indirect cost rate is requested, these costs are included in the indirect cost pool and should not be charged again as direct costs to the grant.

Justification: Enclose a copy of the indirect cost rate agreement. Applicants subject to the limitation on the Federal reimbursement of indirect costs for training grants should specify this.

Total—Line 6k. Enter the total amounts of lines 6i and 6j.

Program Income—Line 7. Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount.

Justification: Describe the nature, source, and anticipated use of program income in the Program Narrative Statement.

Section C—Non-Federal Resources. This section summarizes the amounts of non-Federal resources that will be applied to the grant. Enter this information under the column entitled "Totals" on line 12, Totals. In-kind contributions are defined in title 45 of the Code of Federal Regulations, § 74.51, as "property or services which benefit a grant-supported project or program and which are contributed by non-Federal third parties without charge to the grantee, the subgrantee, or a cost-type contractor under the grant or subgrant."

Justification: Describe third party in-kind contributions, if included.

Section D—Forecasted Cash Needs. Not applicable. Leave blank.

Section E—Budget Estimate of Federal Funds Needed For Balance of the Project. This section should only be completed if the total project period exceeds 17 months.

Totals—Line 20. For projects that will have more than one budget period, enter the estimated required Federal funds for the second budget period (months 13 through 24) under column "(b) First." If a third budget period will be necessary, enter the Federal funds needed for months 25 through 36 under "(c) Second." Columns (d) and (e) are not applicable in most instances, since HDS funding is almost always limited to a three-year maximum project period. They should remain blank.

Section F—Other Budget Information.

Direct Charges—Line 21. Not applicable.

Indirect Charges—Line 22. Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Remarks—Line 23. If the total project period exceeds 17 months, you must enter your proposed non-Federal share of the project budget for each of the remaining years of the project.

3. Project Summary Description

Clearly mark this separate page with the applicant name as shown in item 5 of the SF 424, the priority area number as shown at the top of the SF 424, and the title of the project as shown in item 11 of the SF 424. The summary description should not exceed 1,200 characters, including words, spaces and punctuation. These 1,200 characters become part of the computer database on each project.

Care should be taken to produce a summary description which accurately and concisely reflects the proposal. It should describe the objectives of the project, the approaches to be used and the outcomes expected. The description should also include a list of major products that will result from the proposed project, such as software packages, materials, management procedures, data collection instruments, training packages, or videos (please note that audiovisuals should be closed captioned). The project summary description, together with the information on the SF 424, will constitute the project "abstract." It is the major source of information about the proposed project and is usually the first part of the application that the

reviewers read in evaluating the application.

At the bottom of the page, following the summary description, type up to 10 key words which best describe the proposed project, the service(s) involved and the target population(s) to be covered.

4. Program Narrative Statement

The Program Narrative Statement is a very important part of an application. It should be clear, concise, and address the specific requirements mentioned under the priority area description in part III. The narrative should also provide information concerning how the application meets the evaluation criteria (see part IV, section C), using the following headings:

- (a) *Objectives and Need for Assistance;*
- (b) *Results and Benefits Expected;*
- (c) *Approach; and*
- (d) *Staff Background and Organization's Experience.*

The narrative should be typed double-spaced on a single-side of an 8½"×11" plain white paper, with 1" margins on all sides. All pages of the narrative (including charts, references/footnotes, tables, maps, exhibits, etc.) must be sequentially numbered, beginning with "Objectives and Need for Assistance" as page number one. Applicants should not submit reproductions of larger size paper, reduced to meet the size requirement.

The length of the application, including the application forms and all attachments, should not exceed 60 pages. A page is a single side of an 8½"×11" sheet of paper. Applicants are requested not to send pamphlets, brochures or other printed material along with their application as these pose xeroxing difficulties. These materials, if submitted, will not be included in the review process if they exceed the 60-page limit. Each page of the application will be counted to determine the total length.

5. Organizational Capability Statement

The Organizational Capability Statement should consist of a brief (two to three pages) background description of how the applicant organization (or the unit within the organization that will have responsibility for the project) is organized, the types and quantity of services it provides, and/or the research and management capabilities it possesses. This description should cover capabilities not included in the Program Narrative Statement. It may include descriptions of any current or previous relevant experience, or describe the competence of the project team and its

demonstrated ability to produce a final product that is readily comprehensible and usable. An organization chart showing the relationship of the project to the current organization should be included.

6. Assurances/Certifications

Applicants are required to file an SF 424B, Assurances—Non-construction Programs and the Certification Regarding Lobbying. Both must be signed and returned with the application. In addition, applicants must provide certifications regarding: (1) Drug-Free Workplace Requirements; and (2) debarment and other responsibilities. These two certifications are self-explanatory. Copies of these assurances/certifications are reprinted at the end of this announcement and should be reproduced, as necessary. A duly authorized representative of the applicant organization must certify that the applicant is in compliance with these assurances/certifications. A signature on the SF 424 indicates compliance with the Drug Free Workplace Requirements, and Debarment and Other Responsibilities certifications.

For research projects in which human subjects may be at risk, a Protection of Human Subjects Assurance may be required. If there is a question regarding the applicability of this assurance, contact the Office for Research Risks of the National Institutes of Health at (301) 496-7041.

F. Components of a Complete Application

A complete application consists of the following items in this order:

1. Application for Federal Assistance (Standard Form 424, REV 4-88);
2. Budget Information—Non-construction Programs (Standard Form 424A, REV 4-88);
3. Table of Contents;
4. Budget justification for section B—Budget Categories;
5. Letter from the Internal Revenue Service to prove non-profit status, if necessary;
6. Copy of the applicant's approved indirect cost rate agreement, if appropriate;
7. Project summary description and listing of key words;
8. Program Narrative Statement, organized in four sections addressing the following areas: (a) objectives and need for assistance, (b) results or benefits expected, (c) approach, and (d) staff background and organization's experience;

9. Organizational capability statement, including an organization chart;

10. Any appendices/attachments;
11. Assurances—Non-construction Programs (Standard Form 424B, REV 4-88);

12. Certification Regarding Lobbying; and

13. Certification of Protection of Human Subjects, if necessary.

G. The Application Package

Each application package must include an original and two copies of the complete application. Each copy should be stapled securely (front and back if necessary) in the upper left-hand corner. All pages of the narrative (including charts, tables, maps, exhibits, etc.) must be sequentially numbered, beginning with page one. In order to facilitate handling, please do not use covers, binders or tabs. Do not include extraneous materials as attachments, such as, agency promotion brochures, slides, tapes, film clips, minutes of meetings, survey instruments or articles of incorporation.

Do not include a self-addressed, stamped acknowledgment card. All applicants will be notified automatically about the receipt of their application and of the four digit identification number assigned to their application. This number and the priority area must be referred to in ALL subsequent communication with ADD concerning the application. If acknowledgment of receipt of your application is not received within four weeks after the deadline date, please notify ADD by telephone at (202) 245-2984.

H. Checklist for a Complete Application

The checklist below is for your use to ensure that your application package has been properly prepared.

- One original, signed and dated application, plus two copies.
- Applications for different priority areas are packaged separately;
- Application is from an organization which is eligible under the eligibility requirements defined in the priority area description (screening requirement);
- Application length does not exceed 60 pages, unless otherwise specified in the priority area description.
- Application includes:
- Application for Federal Assistance (Standard Form 424, REV 4-88);
- A completed SPOC certification with the date of SPOC contact entered in line 16, page 1 of the SF 424;

- Budget information—Non-construction Programs (Standard Form 424A, REV 4-88);
- Table of Contents;
- Budget justification;
- Letter from Internal Revenue Service to prove non-profit status, if necessary;
- Indirect cost rate agreement, if necessary;
- Project summary description and key words;

- Program Narrative Statement;
- Organizational Capability Statement;
- Appendices/attachments, if necessary;
- Assurances—Non-Construction Programs (Standard Form 424B, REV 4-88);
- Certification Regarding Lobbying; and
- Certification of Protection of Human Subjects, if necessary.

Federal Catalog of Domestic Assistance Number 93.631 Developmental Disabilities — Projects of National Significance.

Dated: July 11, 1991.

Deborah L. McFadden,

Commissioner, Administration on Developmental Disabilities.

Approved: July 11, 1991.

Donna N. Givens,

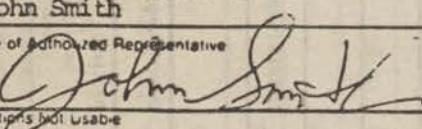
Deputy Assistant Secretary for Children and Families.

BILLING CODE 4130-01-M

**APPLICATION FOR
FEDERAL ASSISTANCE**

Priority Area Number 1

OMB Approval No. 0348-0043

1. TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction		2. DATE SUBMITTED 5/15/91		3. DATE RECEIVED BY STATE	Applicant Identifier State Application Identifier																					
				4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier																					
5. APPLICANT INFORMATION																										
Legal Name Department of Human Resources			Organizational Unit																							
Address (give city county state and zip code) 3242 Montgomery Street Trenton, NJ 08650			Name and telephone number of the person to be contacted on matters involving this application (give area code) John Doe (908) 555-1212																							
6. EMPLOYER IDENTIFICATION NUMBER (EIN) 0 8 - 7 6 5 4 3 2 1			7. TYPE OF APPLICANT: (enter appropriate letter in box) <input checked="" type="checkbox"/> A State <input type="checkbox"/> B County <input type="checkbox"/> C Municipal <input type="checkbox"/> D Township <input type="checkbox"/> E Interstate <input type="checkbox"/> F Intermunicipal <input type="checkbox"/> G Special District <input type="checkbox"/> H Independent School Dist <input type="checkbox"/> I State Controlled Institution of Higher Learning <input type="checkbox"/> J Private University <input type="checkbox"/> K Indian Tribe <input type="checkbox"/> L Individual <input type="checkbox"/> M Profit Organization <input type="checkbox"/> N Other (Specify) _____																							
8. TYPE OF APPLICATION: If Revision, enter appropriate letter(s) in box(es) <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> A Increase Award <input type="checkbox"/> B Decrease Award <input type="checkbox"/> C Increase Duration <input type="checkbox"/> D Decrease Duration <input type="checkbox"/> E Other (specify) _____			9. NAME OF FEDERAL AGENCY DHHS, ACF, Admin. Developmental Disabilities																							
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER 9 3 6 3 1			11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Youth Leadership Development Program																							
12. AREAS AFFECTED BY PROJECT (CITIES, COUNTIES, STATES, ETC.) Mercer County, NJ																										
13. PROPOSED PROJECT		14. CONGRESSIONAL DISTRICTS OF <table border="0"> <tr> <td>a. Applicant</td> <td>5</td> <td>b. Project</td> <td>5</td> </tr> </table>				a. Applicant	5	b. Project	5																	
a. Applicant	5	b. Project	5																							
15. ESTIMATED FUNDING		16. IS THE APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? <table border="0"> <tr> <td>a. Federal</td> <td>\$ 100,000.00</td> <td>b. YES THIS PREAPPLICATION APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON DATE 7/15/91</td> </tr> <tr> <td>b. Applicant</td> <td>\$ 35,000.00</td> <td>c. NO <input type="checkbox"/> PROGRAM IS NOT COVERED BY EO 12372</td> </tr> <tr> <td>c. State</td> <td>\$ 0.00</td> <td>d. <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW</td> </tr> <tr> <td>d. Local</td> <td>\$ 0.00</td> <td></td> </tr> <tr> <td>e. Other</td> <td>\$ 0.00</td> <td></td> </tr> <tr> <td>f. Program Income</td> <td>\$ 0.00</td> <td>17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation <input checked="" type="checkbox"/> No</td> </tr> <tr> <td>g. TOTAL</td> <td>\$ 135,000.00</td> <td></td> </tr> </table>				a. Federal	\$ 100,000.00	b. YES THIS PREAPPLICATION APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON DATE 7/15/91	b. Applicant	\$ 35,000.00	c. NO <input type="checkbox"/> PROGRAM IS NOT COVERED BY EO 12372	c. State	\$ 0.00	d. <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	d. Local	\$ 0.00		e. Other	\$ 0.00		f. Program Income	\$ 0.00	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation <input checked="" type="checkbox"/> No	g. TOTAL	\$ 135,000.00	
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g. TOTAL	\$ 135,000.00																									
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED																										
a. Typed Name of Authorized Representative John Smith		b. Title Executive Director		c. Telephone number 908/555-1212																						
d. Signature of Authorized Representative 		e. Date Signed 7/15/91																								

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SECTION C - NON-FEDERAL RESOURCES						(e) TOTALS
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources			
8.	\$ NA	\$ NA	\$ NA			\$ NA
9.	NA	NA	NA			NA
10.	NA	NA	NA			NA
11.	NA	NA	NA			NA
12. TOTALS (sum of lines 8 and 11)	\$ 35,000	\$ 0	\$ 0			\$ 35,000

SECTION D - FORECASTED CASH NEEDS					
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
13. Federal	\$ NA				
14. Non-Federal	NA	NA	NA	NA	NA
15. TOTAL (sum of lines 13 and 14)	\$ NA				

SECTION E - BUDGET ESTIMATE OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (Year)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$ NA	\$ NA	\$ NA	\$ NA	\$ NA
17.	NA	NA	NA	NA	NA
18.	NA	NA	NA	NA	NA
19.	NA	NA	NA	NA	NA
20. TOTALS (sum of lines 16-19)	\$ 100,000	\$ 100,000	\$ 0	\$ 0	\$ 0

SECTION F - OTHER BUDGET INFORMATION					
(Attach additional Sheets if Necessary)					
21. Direct Charges:	NA	22. Indirect Charges:	NA		
23. Remarks	Non-Federal Share of Project Cost: \$33,333 (2nd year); 33,333 (3rd year)				

BUDGET INFORMATION — Non-Construction Programs**SECTION A - BUDGET SUMMARY**

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DD-PNS	93.631	\$ 93,631	\$ 0	\$ 75,000	\$ 35,000	\$ 135,000
2.						
3.						
4.						
5. TOTALS		\$ 93,631	\$ 0	\$ 75,000	\$ 35,000	\$ 135,000
SECTION B - BUDGET CATEGORIES						
Object Class Categories		GRANT PROGRAM FUNCTION OR ACTIVITY	(1)	(2)	(3)	(4)
6. Object Class Categories						Total (5)
a. Personnel		\$ NA	\$ NA	\$ NA	\$ NA	\$ 60,000
b. Fringe Benefits		\$ NA	\$ NA	\$ NA	\$ NA	\$ 9,000
c. Travel		\$ NA	\$ NA	\$ NA	\$ NA	\$ 7,000
d. Equipment		\$ NA	\$ NA	\$ NA	\$ NA	\$ 10,000
e. Supplies		\$ NA	\$ NA	\$ NA	\$ NA	\$ 5,000
f. Contractual		\$ NA	\$ NA	\$ NA	\$ NA	\$ 25,000
g. Construction		\$ NA	\$ NA	\$ NA	\$ NA	\$ 0
h. Other		\$ NA	\$ NA	\$ NA	\$ NA	\$ 19,000
i. Total Direct Charges (sum of 6a - 6h)		\$ NA	\$ NA	\$ NA	\$ NA	\$ 135,000
j. Indirect Charges						\$ 0
k. TOTALS (sum of 6i and 6j)		\$ 93,631	\$ 0	\$ 75,000	\$ 35,000	\$ 135,000
l. Program Income		\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

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OMB Approval No. 0348-0043

**APPLICATION FOR
FEDERAL ASSISTANCE**

1. TYPE OF SUBMISSION: <i>Application</i> <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		<input type="checkbox"/> Preapplication <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		2. DATE SUBMITTED	Applicant Identifier
				3. DATE RECEIVED BY STATE	State Application Identifier
				4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier
5. APPLICANT INFORMATION					
Legal Name:			Organizational Unit:		
Address (give city, county, state, and zip code):			Name and telephone number of the person to be contacted on matters involving this application (give area code):		
6. EMPLOYER IDENTIFICATION NUMBER (EIN):					
7. TYPE OF APPLICANT: (enter appropriate letter in box)					
<input type="checkbox"/> A. State <input type="checkbox"/> B. County <input type="checkbox"/> C. Municipal <input type="checkbox"/> D. Township <input type="checkbox"/> E. Interstate <input type="checkbox"/> F. Intermunicipal <input type="checkbox"/> G. Special District <input type="checkbox"/> H. Independent School Dist. <input type="checkbox"/> I. State Controlled Institution of Higher Learning <input type="checkbox"/> J. Private University <input type="checkbox"/> K. Indian Tribe <input type="checkbox"/> L. Individual <input type="checkbox"/> M. Profit Organization <input type="checkbox"/> N. Other (Specify): _____					
8. NAME OF FEDERAL AGENCY:					
9. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:					
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:					
TITLE:					
12. AREAS AFFECTED BY PROJECT (cities, counties, states, etc.):					
13. PROPOSED PROJECT:		14. CONGRESSIONAL DISTRICTS OF:			
Start Date	Ending Date	a. Applicant		b. Project	
15. ESTIMATED FUNDING:					
a. Federal	\$ _____ .00	16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?			
b. Applicant	\$ _____ .00	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON DATE _____			
c. State	\$ _____ .00	b. NO. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW			
d. Local	\$ _____ .00				
e. Other	\$ _____ .00				
f. Program Income	\$ _____ .00	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?			
g. TOTAL	\$ _____ .00	<input type="checkbox"/> Yes If "Yes," attach an explanation. <input type="checkbox"/> No			
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED					
a. Typed Name of Authorized Representative			b. Title		c. Telephone number
d. Signature of Authorized Representative					e. Date Signed

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Standard Form 424 (REV 4-88)
Prescribed by OMB Circular A-102

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Instructions for the SF-424

This is a standard form used by applicants as a required facesheet for preapplications and applications submitted for Federal assistance. It will be used by Federal agencies to obtain applicant certification that States which have established a review and comment procedure in response to Executive Order 12372 and have selected the program to be included in their process, have been given an opportunity to review the applicant's submission.

Item No. and Entry

1. Self-explanatory.
2. Date application submitted to Federal agency (or State if applicable) & applicant's control number (if applicable).
3. State use only (if applicable).
4. If this application is to continue or revise an existing award, enter present Federal identifier number. If for a new project, leave blank.
5. Legal name of applicant, name of primary organizational unit which will undertake the assistance activity, complete address of the applicant, and name and telephone number of the person to contact on matters related to this application.
6. Enter Employer Identification Number (EIN) as assigned by the Internal Revenue Service.

7. Enter the appropriate letter in the space provided.
8. Check appropriate box and enter appropriate letter(s) in the space(s) provided:
 - "New" means a new assistance award.
 - "Continuation" means an extension for an additional funding/budget period for a project with a projected completion date.
 - "Revision" means any change in the Federal Government's financial obligation or contingent liability from an existing obligation.
9. Name of Federal agency from which assistance is being requested with this application.
10. Use the Catalog of Federal Domestic Assistance number and title of the program under which assistance is requested.
11. Enter a brief descriptive title of the project. If more than one program is involved, you should append an explanation on a separate sheet. If appropriate (e.g., construction or real property projects), attach a map showing project location. For preapplications, use a separate sheet to provide a summary description of this project.
12. List only the largest political entities affected (e.g., State, counties, cities).
13. Self-explanatory.
14. List the applicant's Congressional District and any District(s) affected by the program or project.

15. Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions should be included on appropriate lines as applicable. If the action will result in a dollar change to an existing award, indicate *only* the amount of the change. For decreases, enclose the amounts in parentheses. If both basic and supplemental amounts are included, show breakdown on an attached sheet. For multiple program funding, use totals and show breakdown using same categories as item 15.

16. Applicants should contact the State Single Point of Contact (SPOC) for Federal Executive Order 12372 to determine whether the application is subject to the State intergovernmental review process.

17. This question applies to the applicant organization, not the person who signs as the authorized representative. Categories of debt include delinquent audit disallowances, loans and taxes.

18. To be signed by the authorized representative of the applicant. A copy of the governing body's authorization for you to sign this application as official representative must be on file in the applicant's office. (Certain Federal agencies may require that this authorization be submitted as part of the application.)

BILLING CODE 4130-01-M

SECTION A - BUDGET SUMMARY							New or Revised Budget		
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		Federal (e)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)	
		Federal (c)	\$						\$
1.		\$	\$	\$	\$	\$	\$		
2.									
3.									
4.									
5. TOTALS		\$	\$	\$	\$	\$	\$		

SECTION B - BUDGET CATEGORIES							GRANT PROGRAM, FUNCTION OR ACTIVITY			Total (5)
6. Object Class Categories	(1)	(2)		(3)	(4)	(5)				
		\$	\$				\$	\$		
a. Personnel	\$	\$	\$	\$	\$	\$				
b. Fringe Benefits										
c. Travel										
d. Equipment										
e. Supplies										
f. Contractual										
g. Construction										
h. Other										
i. Total Direct Charges (sum of 6a - 6h)										
j. Indirect Charges										
k. TOTALS (sum of 6i and 6j)	\$	\$	\$	\$	\$	\$				
l. Program Income	\$	\$	\$	\$	\$	\$				

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 Standard Form 421A (4-88)
 Prescribed by OMB Circular A-102

SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.	\$	\$	\$	\$	\$
9.					
10.					
11.					
12. TOTALS (sum of lines 8 and 11)	\$	\$	\$	\$	\$
SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$	\$	\$	\$	\$
14. NonFederal					
15. TOTAL (sum of lines 13 and 14)	\$	\$	\$	\$	\$
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$	\$	\$	\$	\$
17.					
18.					
19.					
20. TOTALS (sum of lines 16-19)	\$	\$	\$	\$	\$
SECTION F - OTHER BUDGET INFORMATION					
(Attach additional Sheets if Necessary)					
21. Direct Charges:	22. Indirect Charges:				
23. Remarks					

SF 421A (4-88) Page 2
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Instructions for the SF-424A**General Instructions**

This form is designed so that application can be made for funds from one or more grant programs. In preparing the budget, adhere to any existing Federal grantor agency guidelines which prescribe how and whether budgeted amounts should be separately shown for different functions or activities within the program. For some programs, grantor agencies may require budgets to be separately shown by function or activity. For other programs, grantor agencies may require a breakdown by function or activity. Sections A, B, C, and D should include budget estimates for the whole project except when applying for assistance which requires Federal authorization in annual or other funding period increments. In the latter case, Section A, B, C, and D should provide the budget for the first budget period (usually a year) and Section E should present the need for Federal assistance in the subsequent budget periods. All applications should contain a breakdown by the object class categories shown in Lines a-k of Section B.

Section A. Budget Summary, Lines 1-4, Columns (a) and (b)

For applications pertaining to a *single* Federal grant program [Federal Domestic Assistance Catalog number] and *not* requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a *single* program *requiring* budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in Column (a) and the respective catalog number on each line in Column (b).

For applications pertaining to *multiple* programs where one or more programs *require* a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

Lines 1-4, Columns (c) Through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

For continuing grant program applications, submit these forms before the end of each funding period as required by the grantor

agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in columns (e) and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

For supplemental grants and changes to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

Line 5—Show the totals for all columns used.

Section B Budget Categories

In the column headings (1) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

Lines 6a-i—Show the totals of Lines 6a to 6h in each column.

Line 6j—Show the amount of indirect cost.

Line 6k—Enter the total of amounts on Lines 6i and 6j. For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.

Line 7—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.

Section C. Non-Federal Resources

Lines 8-11—Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

Column (a)—Enter the program titles identical to Column (a), Section A. A

breakdown by function or activity is not necessary.

Column (b)—Enter the contribution to be made by the applicant.

Column (c)—Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

Column (d)—Enter the amount of cash and in-kind contributions to be made from all other sources.

Column (e)—Enter totals of Columns (b), (c), and (d).

Line 12—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f), Section A.

Section D. Forecasted Cash Needs

Line 13—Enter the amount of cash needed by quarter from the grantor agency during the first year.

Line 14—Enter the amount of cash from all other sources needed by quarter during the first year.

Line 15—Enter the totals of amounts on Lines 13 and 14.

Section E. Budget Estimates of Federal Funds Needed for Balance of the Project

Lines 16-19—Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

Line 20—Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

Section F. Other Budget Information

Line 21—Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

Line 22—Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Line 23—Provide any other explanations or comments deemed necessary.

BILLING CODE 4130-01-M

ASSURANCES — NON-CONSTRUCTION PROGRAMS

Note: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§ 4728-4763) relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§ 1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101-6107), which prohibits discrimination on the basis of age;
7. (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§ 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. § 3601 et seq.), as amended, relating to non-discrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
8. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
9. Will comply with the provisions of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
10. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§ 276a to 276a-7), the Copeland Act (40 U.S.C. § 276c and 18 U.S.C. §§ 874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 327-333), regarding labor standards for federally assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451 et seq.); (f) conformity of Federal actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clear Air Act of 1955, as amended (42 U.S.C. § 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended, (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§ 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§ 4801 et seq.) which prohibits the use of lead based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act of 1984.
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE
APPLICANT ORGANIZATION	DATE SUBMITTED

U.S. Department of Health and Human Services Certification Regarding Drug-Free Workplace Requirements Grantees Other Than Individuals

By signing and/or submitting this application or grant agreement, the grantee is providing the certification set out below.

This certification is required by regulations implementing the Drug-Free Workplace Act of 1988, 45 CFR part 76, subpart F. The regulations, published in the May 25, 1990 *Federal Register*, require certification by grantees that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the Department of Health and Human Services (HHS) determines to award the grant. If it is later determined that the grantee knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, HHS, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of grants, or governmentwide suspension or debarment.

Workplaces under grants, for grantees other than individuals, need not be identified on the certification. If known, they may be identified in the grant application. If the grantee does not identify the workplaces at the time of application, or upon award, if there is no application, the grantee must keep the identity of the workplace(s) on file in its office and make the information available for Federal inspection. Failure to identify all known workplaces constitutes a violation of the grantee's drug-free workplace requirements.

Workplace identifications must include the actual address of buildings (or parts of buildings) or other sites where work under the grant takes place. Categorical descriptions may be used (e.g., all vehicles of a mass transit authority or State highway department while in operation, State employees in each local unemployment office, performers in concert halls or radio studios.)

If the workplace identified to HHS changes during the performance of the grant, the grantee shall inform the agency of the change(s), if it previously identified the workplaces in question (see above).

Definitions of terms in the Nonprocurement Suspension and Debarment common rule and Drug-Free Workplace common rule apply to this certification. Grantees' attention is called, in particular, to the following definitions from these rules:

"Controlled substance" means a controlled substance in Schedules I through V of the Controlled Substances Act (21 USC 812) and as further defined by regulation (21 CFR 1308.11 through 1308.15).

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the

manufacture, distribution, dispensing, use, or possession of any controlled substance;

"Employee" means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) All "direct charge" employees; (ii) all "indirect charge" employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if used to meet a matching requirement; consultants or independent contractors not on the grantee's payroll; or employees of subrecipients or subcontractors in covered workplaces).

The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace; (2) The grantee's policy of maintaining a drug-free workplace; (3) Any available drug counseling, rehabilitation, and employee assistance programs; and, (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will:

(1) Abide by the terms of the statement; and, (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or, (2) Requiring such employee to participate satisfactorily in a

drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant (use attachments, if needed):

Place of Performance (Street address, City, County, State, ZIP Code)

Check () if there are workplaces on file that are not identified here.

Sections 76.630 (c) and (d)(2) and 76.635 (a)(1) and (b) provide that a Federal agency may designate a central receipt point for State-wide and State Agency-wide certifications, and for notification of criminal drug convictions. For the Department of Health and Human Services, the central receipt point is: Division of Grants Management and Oversight, Office of Management and Acquisition, Department of Health and Human Services, Room 517-D, 200 Independence Avenue, SW., Washington, D.C. 20201.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters—Primary Covered Transactions

By signing and submitting this proposal, the applicant, defined as the primary participant in accordance with 45 CFR Part 76, certifies to the best of its knowledge and belief that it and its principals:

(a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency;

(b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) are not presently indicted or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) have not within a 3-year period preceding this application/proposal had

one or more public transactions (Federal, State, or local) terminated for cause or default.

The inability of a person to provide the certification required above will not necessarily result in denial of participation in this covered transaction. If necessary, the prospective participant shall submit an explanation of why it cannot provide the certification. The certification or explanation will be considered in connection with the Department of Health and Human Services (HHS) determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

The prospective primary participant agrees that by submitting this proposal,

it will include the clause entitled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion—Lower Tier Covered Transaction." provided below without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Lower Tier Covered Transactions (To Be Supplied to Lower Tier Participants)

By signing and submitting this lower tier proposal, the prospective lower tier participant, as defined in 45 CFR part 76, certifies to the best of its knowledge and belief that it and its principals:

- (a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily

excluded from participation in this transaction by any federal department or agency.

(b) where the prospective lower tier participant is unable to certify to any of the above, such prospective participant shall attach an explanation to this proposal.

The prospective lower tier participant further agrees by submitting this proposal that it will include this clause entitled "certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion—Lower Tier Covered Transactions. "without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

BILLING CODE 4130-01-M

Certification Regarding Lobbying

Certification For Contracts, Grants, Loans,
and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Organization

Authorized Signature Title Date

Note: If Disclosure Forms are required, please contact: Deputy Director, Grants and Contracts Management Division, Room 341F, HHH Building, 200 Independence Avenue, SW, Washington, D.C. 20201-0001

Executive Order 12372—State Single Points of Contact**Alabama**

Mrs. Moncell Thornell, State Single Point of Contact, Alabama Department of Economic and Community Affairs, 3465 Norman Bridge Road, Post Office Box 250347, Montgomery, Alabama 36125-0347 tel. (205) 284-8905.

Arizona

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Arkansas

Mr. Joseph Gillespie, Manager, State Clearinghouse, Office of Intergovernmental Services, Department of Finance and Administration, P.O. Box 3278, Little Rock, Arkansas 72203, tel. (501) 371-1074.

California

Loreen McMahon, Grants Coordinator, Office of Planning and Research, 1400 Tenth Street, Sacramento, California 95814, tel. (916) 323-7480.

Colorado

State Single Point of Contact, State Clearinghouse, Division of Local Government, 1313 Sherman Street, Room 520, Denver, Colorado 80203, tel. (303) 866-2156.

Connecticut

Under Secretary, attn: Intergovernmental Review Coordinator, Comprehensive Planning Division, Office of Policy and Management, 80 Washington Street, Hartford, Connecticut 06106-4459 tel. (203) 568-3410.

Delaware

Francine Booth, State Single Point of Contact, Executive Department, Thomas Collins Building, Dover, Delaware 19903, tel. (302) 736-3326.

District of Columbia

Lovetta Davis, State Single Point of Contact, Executive Office of the Mayor, Office of Intergovernmental Relations, Room 416, District Building, 1350 Pennsylvania Avenue, NW., Washington, DC 20004, tel. (202) 727-3111.

Florida

Karen McFarland, Director, Florida State Clearinghouse, Executive Office of the Governor, Office of Planning and Budgeting, The Capitol, Tallahassee, Florida 32399-0001, tel. (904) 488-8114.

Georgia

Charles H. Badger, Administrator, Georgia State Clearinghouse, 270 Washington Street, SW., Atlanta, Georgia 30334, tel. (404) 656-3855.

Hawaii

Harold S. Masumoto, Acting Director, Office of State Planning, Department of Planning and Economic Development, Office of the Governor, State Capitol, Honolulu, Hawaii 96813, tel. (808) 548-3016 or 548-3085.

Illinois

Tom Berkshire, State Single Point of Contact, Office of the Governor, State of Illinois, Springfield, Illinois 62706, tel. (217) 782-8639.

Indiana

Frank Sullivan, Budget Director, State Budget Agency, 212 State House, Indianapolis, Indiana 46204, tel. (317) 232-5610.

Iowa

Steven R. McCann, Division of Community Progress, Iowa Department of Economic Development, 200 East Grand Avenue, Des Moines, Iowa 50309, tel. (515) 28-3725.

Kentucky

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Maine

State Single Point of Contact, attn: Joyce Benson, State Planning Office, State House Station #38, Augusta, Maine 04333, tel. (207) 289-3261.

Maryland

Mary Abrams, Chief, Maryland State Clearinghouse, Department of State Planning, 301 West Preston Street, Baltimore, Maryland 21201-2365, tel. (301) 225-4490.

Massachusetts

State Single Point of Contact, attn: Beverly Boyle, Executive Office of Communities and Development, 100 Cambridge Street, room 1803, Boston, Massachusetts 02202, tel. (617) 727-7001.

Michigan

Milton O. Waters, Director of Operations, Michigan Neighborhood Builders Alliance, Michigan Department of Commerce, tel. (517) 373-7111.

Please direct correspondence to: Manager, Federal Project Review, Michigan Department of Commerce, Michigan Neighborhood Builders Alliance, P.O. Box 30242, Lansing, Michigan 48909, telephone (517) 373-6223.

Mississippi

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Missouri

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Montana

Deborah Stanton, State Single Point of Contact, Intergovernmental Review Clearinghouse, c/o Office of Budget and Program Planning, Capitol Station, room 202—State Capitol, Helena, Montana 59620, tel. (406) 444-5522.

Nevada

Department of Administration, State Clearinghouse, Capitol Complex, Carson City, NV. 89710, tel. (702) 687-4420, attn: John B. Walker, Clearinghouse Coordinator.

New Hampshire

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New Jersey

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New Mexico

Dorothy E. (Duffy) Rodriguez, Deputy Director, State Budget Division, Department of Finance & Administration, room 190, Bataan Memorial Building, Santa Fe, New Mexico 87503, telephone (505) 827-3840.

New York

New York State Clearinghouse, Division of the Budget, State Capitol, Albany, New York 12224, tel. (518) 474-1805.

North Carolina

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North Dakota

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Ohio

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Oklahoma

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Oregon

Attn: Delores Streeter, State Single Point of Contact, Intergovernmental Relations Division, State Clearinghouse, 155 Cottage Street, NE., Salem, Oregon 97310, tel. (503) 373-1998.

Pennsylvania

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Rhode Island

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Utah

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Wisconsin

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Federal-State Relations Office, Wisconsin
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Wyoming

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Guam

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Northern Mariana Islands

State Single Point of Contact, Planning and
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Alaska

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Arizona

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Kansas

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Kentucky

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Louisiana

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Maine

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Michigan

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Minnesota

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Mississippi

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Missouri

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Montana

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Nebraska

Ms. Mary Gordon, Director, Governor's Planning Council on Developmental Disabilities, 301 Centennial Mall South, P.O. Box 95007, Lincoln, Nebraska 68509, (402) 471-2330.

Nevada

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New Hampshire

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New Mexico

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New York

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North Carolina

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North Dakota

Tom Wallner, Director, Developmental Disabilities Council, Department of Human Services, State Capitol, Bismarck, North Dakota 58505-9999, (701) 224-2970.

Northern Mariana Islands

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Ohio

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Oklahoma

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Oregon

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Pennsylvania

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Puerto Rico

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Rhode Island

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South Carolina

LaNelle C. DuRant, Executive Director, South Carolina Developmental Disabilities Planning Council, Edgar Brown Building, room 372, 1205 Pendleton Street, Columbia, South Carolina 29201-3731, (803) 734-0485.

South Dakota

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Tennessee

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Texas

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Utah

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Vermont

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Virginia

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Virgin Islands

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Washington

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GH-51, room 360, Olympia, Washington
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West Virginia

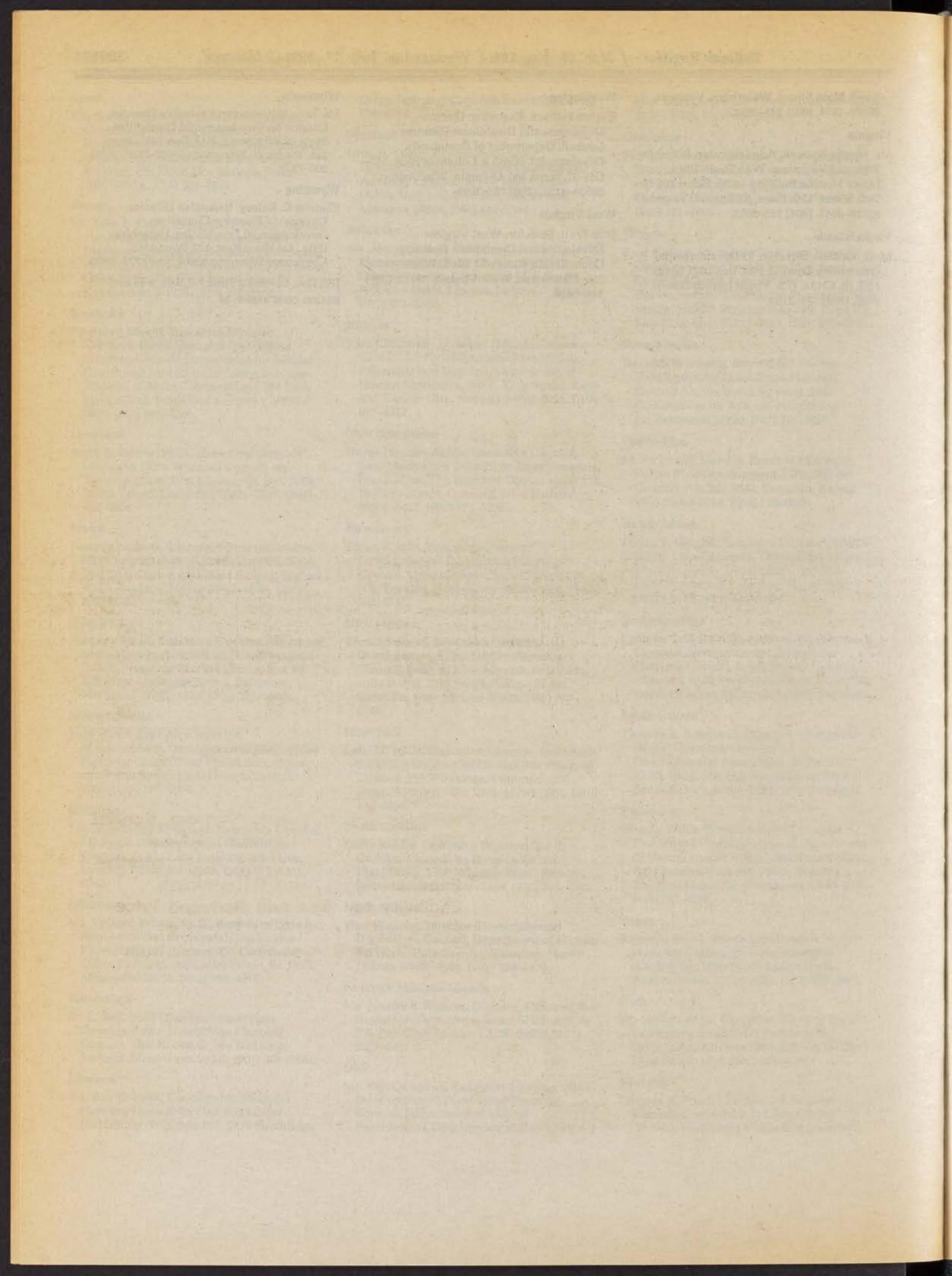
Julie Pratt, Director, West Virginia
Developmental Disabilities Planning
Council, 1601 Kanawha Blvd. West—suite
200, Charleston, West Virginia 25312, (304)
348-0416.

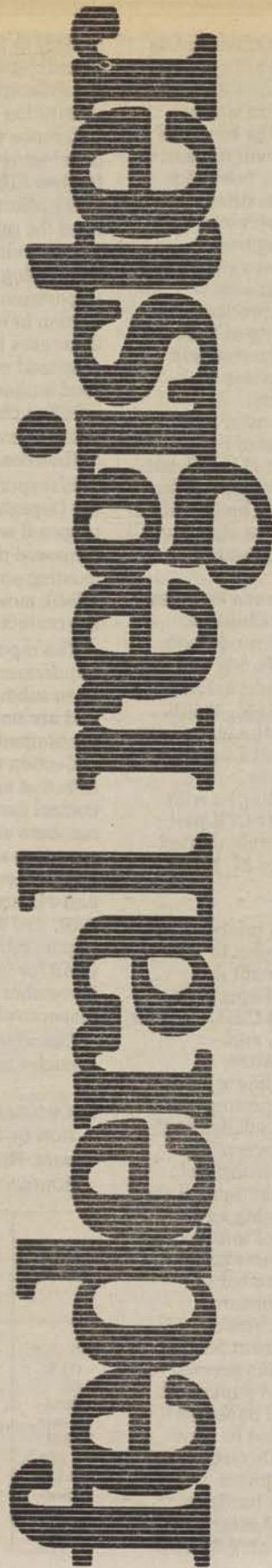
Wisconsin

Ms. Jayn Wittenmyer, Executive Director,
Council on Developmental Disabilities,
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Wyoming

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[FR Doc. 91-16932 Filed 7-16-91; 8:45 am]
BILLING CODE 4130-01-M





Wednesday
July 17, 1991

Part IV

Department of Agriculture

Food and Nutrition Service

7 CFR Part 210, et al.

National School Lunch Program, Special Milk Program for Children, School Breakfast Program, State Administrative Expense Funds, and Determining Eligibility for Free and Reduced Price Meals and Free Milk in Schools: Coordinated Review Effort; Final Rule

DEPARTMENT OF AGRICULTURE**Food and Nutrition Service****7 CFR Parts 210, 215, 220, 235, and 245****National School Lunch Program, Special Milk Program for Children, School Breakfast Program, State Administrative Expense Funds, and Determining Eligibility for Free and Reduced Price Meals and Free Milk in Schools: Coordinated Review Effort**

AGENCY: Food and Nutrition Service, USDA.

ACTION: Final rule.

SUMMARY: Section 110 of the Child Nutrition and WIC Reauthorization Act of 1989, Public Law 101-147, enacted November 10, 1989, directed the Department to prescribe and administer a unified system for ensuring that local food service authorities which participate in the National School Lunch Program comply with Program regulations. In response, the Department published a proposed rule (55 FR 52754) on December 21, 1990, which set forth a two-part system designed to unify Federal and State accountability and compliance activities. Over 4,000 comments were received during the public comment period addressing a wide range of issues. This final rule sets forth a unified Federal and State monitoring system, the Coordinated Review Effort. Under the Coordinated Review Effort, State agencies are required to conduct administrative reviews of each participating school food authority once every 4 years. The Food and Nutrition Service (FNS) will monitor State agency compliance with Program regulations through management evaluations. FNS will also conduct a number of local school food authority reviews, including follow-up reviews, which will count toward the State agency's review requirements. The Department expects this rule to improve Program management through enhanced monitoring and corrective action while eliminating overlapping review activity.

EFFECTIVE DATE: August 16, 1991.

FOR FURTHER INFORMATION CONTACT: Robert M. Eadie or Charles Heise, Policy and Program Development Branch, Child Nutrition Division, FNS, USDA, 3101 Park Center Drive, room 1007, Alexandria, Virginia 22302, phone: 703-756-3620.

SUPPLEMENTARY INFORMATION:**Classification**

This final rule has been reviewed by the Assistant Secretary for Food and Consumer Services under Executive

Order 12291 and has been classified as not major because it does not meet any of the three criteria identified under the Executive order. This action will not have an annual effect on the economy of \$100 million or more, nor will it result in major increases in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. Furthermore, it will not have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule has been reviewed with regard to the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 through 612). The Administrator of the Food and Nutrition Service has certified that this rule will not have a significant economic impact on a substantial number of small entities.

The National School Lunch Program, Special Milk Program for Children, School Breakfast Program, and State Administrative Expense Funds, are listed in the Catalog of Federal Domestic Assistance under Nos. 10.555, 10.556, 10.553, and 10.560, respectively, and are subject to the provisions of Executive Order 12372 which requires intergovernmental consultation with State and local officials. (7 CFR part 3015, subpart V and final rule-related notice at 48 FR 29112, June 24, 1983.)

Information Collection

This final rule contains information collections which are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1980 (44 U.S.C. chapter 35). The title, description, and respondent of the information collections are shown below with an estimate of the annual reporting and recordkeeping burdens. Included in the estimate is the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Title: Coordinated Review Effort.

Description: A large number of commenters expressed concern regarding the paperwork burden estimated by the Department for the proposed rule. Commenters seemed to believe that the estimated paperwork burden reflected the total paperwork burden for the Coordinated Review Effort. This was not the Department's intent. Rather, the Department compared the paperwork burdens imposed by the existing Assessment, Improvement and Monitoring System

(AIMS) to those imposed by the Coordinated Review Effort, and found the difference between the two monitoring systems was 30 hours. The difference was small because, when developing the proposed Coordinated Review Effort, the Department made every effort to design a system which used the reporting and recordkeeping systems already in place. Moreover, in developing new requirements, the Department sought to balance increased burden in one area with corresponding decreases in another. For example, the proposed re-definition of "large school food authority" as one with 30,000 enrolled children was balanced with a 5-year review cycle for small school food authorities.

In response to commenter's concerns, the Department made changes to the proposal which reduce not only the proposed paperwork burden but also the existing paperwork burden imposed by AIMS, most notably, the elimination of the corrective action plan.

The reporting and recordkeeping requirements identified below have been submitted to the OMB for approval and are not effective until such approval is obtained. The new information collection requirements will not become effective until the OMB has assigned a control number. The OMB control numbers assigned to the existing reporting and recordkeeping requirements of 7 CFR parts 210, 235, and 245 are OMB Nos. 0584-0006, 0584-0067, and 0584-0026, respectively. These requirements have been approved by OMB for use through June 30, 1991, November 30, 1992, and June 30, 1993, respectively.

Description of Respondents: State agencies and school food authorities.

COORDINATED REVIEW EFFORT DESCRIPTION OF RESPONDENTS' ESTIMATED ANNUAL REPORTING AND RECORDKEEPING BURDENS

Section 7 CFR part	Annual No. of respond- ents	Annual fre- quency	Aver- age burden per re- sponse	Annual burden hours
210.18(d), (1) & (2): Prev-i- ous.....				
Final rule.....	59	1.27	2	150
210.18(i): Prev-i- ous.....	450	1	14	6,300
Final rule.....	0	0	0	0

COORDINATED REVIEW EFFORT DESCRIPTION OF RESPONDENTS' ESTIMATED ANNUAL REPORTING AND RECORDKEEPING BURDENS—Continued

Section 7 CFR part	Annual No. of respondents	Annual frequency	Average burden per response	Annual burden hours
210.18(m): Previous Final Rule	7	64.28	.25	113
210.18(n): Previous Final rule	0	0	0	0
210.9(b) (18): Previous Final rule	3	1	40	120
210.9(b) (18): Previous Final rule	0	0	0	0
210.9(b) (18): Previous Final rule	150	1	5	750
Total previous burden hours: 6,533.				
Total proposed burden hours: 900.				
Total difference: -5,633.				

245.6a(c) (5): Previous Final rule	89,256	1	.017	1,517
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Total previous burden hours: 0.
Total proposed burden hours: 1,517.
Total difference: +1,517.

Background

Section 110 of Public Law 101-147, enacted November 10, 1989, amended the National School Lunch Act (42 U.S.C. 1751-1769c) by adding a new section 22 which states:

There shall be a unified system prescribed and administered by the Secretary for ensuring that local food service authorities that participate in the school lunch program under this Act comply with the provisions of this Act * * * [E]ach State educational agency shall—(A) require that local food service authorities comply with the provisions of this Act; and (B) ensure such compliance through reasonable audits and supervisory assistance reviews * * * In carrying out this section, the Secretary shall—(1) assist the State educational agency in the monitoring of programs conducted by local food service authorities; and (2) through management evaluations, review the compliance of the State educational agency and the local school food service authorities with regulations issued under this Act * * *

In response, the Department published a rule in the *Federal Register* (55 FR 52754) on December 21, 1990 which set forth a series of proposed revisions to Program monitoring regulations. The proposed regulations, collectively

termed the Coordinated Review Effort, would have required State agencies to conduct supervisory assistance reviews of local school food authorities on a 3/5-year cycle. Schools within a school food authority would have been selected for review on an error prone basis. FNS would have continued to conduct management evaluations of State agencies, including a number of local school food authority reviews to evaluate State agency administration of the Program. These local school food authority reviews would have counted towards the State agency review requirements. The Coordinated Review Effort would have replaced AIMS and other oversight requirements (except for those required by Federal and State statutes or regulations or OMB Circulars). The Office of the Inspector General and the General Accounting Office would have, however, continued to conduct Program audits, as they deemed necessary.

Initially, the Department provided a 60-day comment period, which closed on February 19, 1991. During that time, a number of commenters requested an extension of the comment period to ensure that commenters had sufficient opportunity to develop substantive comments. To accommodate the commenters' concerns, the Department extended the comment period through April 5, 1991. During this 105-day public comment period, 4025 comments were received.

A number of commenters identified the effects of certain provisions would have on their particular circumstances. These comments were most helpful in isolating the problem provisions in the proposal and in developing solutions to those problems. It was clear that a number of commenters spent a great deal of time developing substantive comments. The Department is most appreciative of that effort.

The commenters addressed a wide range of issues which will be discussed on a section-by-section basis in the remainder of this preamble. Generally, commenters' concerns focused on the burden they believed the proposal would have imposed. The provisions which drew the most concern were (1) the open-ended number of schools to be reviewed on a first review, (2) the implementation date, (3) the 3/5 year review cycles and the definition of large school food authority, (4) the verification penalty, (5) the claim editing requirements, (6) the lowered review thresholds for triggering follow-up reviews, (7) withholding payments, and (8) reconstruction of meal counts. As indicated above, the Department

carefully considered all comments and made every effort to accommodate suggested alternatives. The Department believes the resultant final rule will achieve the necessary balance between developing an effective Program integrity tool and minimizing the workload at the State and local level.

Many commenters viewed the proposed Coordinated Review Effort requirements as an increase in burden for State agencies and school food authorities. The Department disagrees, since the proposed Coordinated Review Effort relied substantially on existing reporting and recordkeeping activities.

While this final rule also relies on existing reporting and recordkeeping activities, the Department took this opportunity to respond to commenter concerns and those of the task force on Paperwork Reduction in Child Nutrition Programs by reducing the existing burden levels. The task force recommended that implementation of changes in the regulations should be made only at the beginning of the school year. This final rule has a mandatory implementation date of July 1, 1992, the start of the 1992-1993 School Year. The task force also recommended the elimination of all portions of the Program regulations that relate to edit checks. This final rule eliminates one of the two required edit checks. The task force recommended raising the claims disregard threshold from \$100 to \$500 and also allowing current fiscal year claims to be disregarded if they are less than \$500. This final rule incorporates this suggestion; however, the dollar amount is \$250. Finally, the task force recommended that their report be considered formal comment on the proposed rule for the Coordinated Review Effort and they urged the Department to continue the involvement of State and local representatives in developing review guidance.

The Department recognizes developing instruments and guidance materials and training personnel will be critical to the success of this monitoring effort. To this end, the Department intends to solicit input individually from representatives of State and local agencies in the development of needed instruments and guidance. These consultations will enable the Department to benefit from the State and local operating experiences in the development of materials so that the paperwork burdens will be targeted to essential elements. The Department believes this approach will benefit the State agencies as well. From this effort one set of forms will be developed by FNS which should save the participating

State agencies from the burden of forms development. Rather, State agencies can focus their efforts on customizing existing forms to cover other regulatory areas while being assured that the minimum levels of review are addressed.

The extension of the comment period, the time needed to analyze the large body of comments and the need for lead time in the development of materials, precludes mandatory implementation for this school year. Consequently, for School Year 1991-1992, State agencies have three implementation options available. State agencies may elect to monitor in accordance with the Coordinated Review Effort (\S 220.18), or the State agency may elect to monitor in accordance with the existing AIMS (\S 210.18a). The third option would enable a State agency to create its own monitoring system based on the authority provided under \S 210.18a(j). Alternate AIMS (\S 210.18(n) of the existing regulations). As with any State alternate to AIMS, a State agency electing to phase in the provisions of the Coordinated Review Effort through the authority provided under alternate AIMS is required to receive the approval of the FNS Regional Office to ensure that the planned School Year 1991-1992 monitoring responsibilities meet Program requirements.

In order to provide State agencies with these implementation options for the 1991-1992 School Year, the Department is retaining AIMS in \S 210.18a of this final rule, effective through June 30, 1992. As of July 1, 1992, the AIMS regulations will expire, and all State agencies will be bound by the provisions of the Coordinated Review Effort as described in \S 210.18.

To assist the reader, the preamble addresses commenter concerns, by paragraph, in each of the following areas:

- I. \S 210.18 Administrative Reviews
- II. \S 210.18a Assessment, Improvement and Monitoring System
- III. \S 210.19 Additional Responsibilities
- IV. \S 210.30 Management Evaluations
- V. Miscellaneous Amendments
- VI. Overview of the Coordinated Review Effort

Paragraphs where no comments were received and no changes were made are not addressed in the preamble but are finalized in the regulatory text as proposed. Readers should note that while all comments were taken into consideration this preamble does not discuss each individual comment. The preamble, does, however, address all issues raised by a large number of commenters and deals with specific

individual comments which raised significant concerns.

In addition, readers are advised that references to "existing Program regulations" refer to those regulations in place prior to the effective date of this final rule.

I. Section 210.18 Administrative Reviews

General

In the proposed rule, \S 210.18 was entitled "Supervisory assistance reviews." A large number of commenters suggested that the term was misleading since the reviews conducted under the proposed Coordinated Review Effort focused on compliance and not on technical assistance. The Department fully expected the corrective action portions of the Coordinated Review Effort to be a medium for technical assistance. As such, the term "supervisory assistance reviews" seemed appropriate. However, in deference to the number of commenters who are concerned with the term, the Department has replaced the term "supervisory assistance reviews" with "administrative reviews" throughout the final rule. The Department hopes this change conveys both the compliance nature of the review, as well as the technical assistance aspects of corrective action.

Implementation

The proposed introductory paragraph, \S 210.18(a), stated that each State agency shall conduct reviews as prescribed in \S 210.18, in cooperation with FNS. This statement was intended to convey at least a portion of FNS's role in the Coordinated Review Effort, i.e., to conduct reviews and follow-up reviews of problem school food authorities, on behalf of the State agency. A number of commenters expressed concerns regarding the cooperative nature of the proposal and suggested deleting the phrase, "in cooperation with FNS" since it implies that State agencies are not fully responsible for conducting the review activities. The final rule accommodates the commenters' suggestion.

Given the large number of commenters concerned about implementation dates, the Department took the opportunity to expand the focus of \S 210.18 to address implementation dates. Paragraph (a), entitled "Implementation dates" in the final rule, allows State agencies to begin implementation of the Coordinated Review Effort on August 16, 1991, in lieu of continuing with AIMS (\S 210.18a) for School Year 1991-1992. Paragraph (a) requires State agencies to fully

implement the Coordinated Review Effort no later than July 1, 1992.

Definitions

Commenters made a number of suggestions regarding several of the definitions in proposed \S 210.18(b), Definitions, which resulted in some significant changes to this section in the final rule. Further information on the rationale for the more substantive changes will be provided later in the appropriate sections of the preamble.

Several commenters recommended replacing the definition of *Critical areas* (and all subsequent references) with the term "performance standards." The Department considered this approach but concluded a broader term was needed for ease in discussing those provisions that apply to both performance standards. The term "critical areas" was chosen to convey the importance of the Program operations covered by the performance standards.

A number of commenters addressed the definitions of *Performance Standard 1* and *Performance Standard 2*. Commenters believed that missing information on free and reduced price applications such as social security numbers should not result in fiscal action. The Department has provided relief in this area. See the discussion under \S 210.19(c)(6) and \S 210.19(d) later in this preamble. Several commenters recommended combining proposed *Performance Standard 1* and proposed *Performance Standard 2*. This is addressed later in the preamble under \S 210.18(g)(1) and (2). Commenters also recommended dividing proposed *Performance Standard 2* into school level and school food authority level requirements. This idea is discussed later in this preamble under \S 210.18(i)(3).

Commenters also addressed proposed definition, *Performance Standard 3*. Commenter concerns focused on the use of production records as a monitoring tool. This concern is discussed under \S 210.18(g)(3) of this preamble.

The definition of *Documented corrective action* elicited a number of comments. Commenters suggested that documented corrective action was simply another paperwork burden. This final rule retains the requirement for documented corrective action but deletes the corrective action plan, as described under \S 210.18(l) of this preamble, which should offset the concern regarding the paperwork burden.

A number of commenters recommended that the definition of

General areas be renamed "Other Regulatory Areas." The Department did not make this change because the final rule reduces the coverage of the general areas. A change in the term "general areas" would lead to confusion give the shift in review coverage.

A large number of comments were received concerning the definition of *Large school food authority*; these comments are addressed in § 210.18(c)(1) of this preamble. Readers should note that the Department responded to commenter concerns and the definition remains essentially as stated in § 210.18(g)(5) of existing Program regulations.

A number of commenters addressed the definition of *Participation factor*. These comments are addressed in §§ 210.2/210.18 of the Miscellaneous Amendments section of this preamble.

Timing of Reviews

Section § 210.18(c), Timing of reviews, generated a great deal of concern. Commenters were primarily concerned about implementation of the Coordinated Review Effort beginning on July 1, 1991. The Department recognizes the commenters' concerns and has given the State agencies the option to phase in implementation of the final rule, as described under § 210.18(a) and § 210.18a(a) of this preamble or to wait until July, 1992.

Another area of commenter concern was the 3/5 year review cycle proposed in § 210.18(c)(1), Timing of reviews. The proposed rule would have required the State agency to review all large school food authorities on a 3-year basis and all small school food authorities on a 5-year basis, provided that each large school food authority would be reviewed at least once every 4 years and each small school food authority would be reviewed at least once every 6 years. A corresponding change in the definition of *Large school food authority* (§ 210.18(b)(6)) was proposed. The change would have expanded the number of large school food authorities from those with enrollments of 40,000 or more to include those with enrollments of 30,000 or more. A large number of commenters argued that the size of the district should not be a criterion for the frequency of review. Some commenters suggested that a 5-year review period for small school food authorities was too long a period between reviews. Several commenters suggested that a 3/5-year cycle adds further complexity to an already complex process. A number of commenters suggested the retention of the 4-year AIMS review cycle with some variations to allow the State agency to target problem areas.

In order to accommodate commenter concerns, this final rule retains the existing definition of *Large school food authority* (§ 210.18(b)(6)), i.e., enrollments of 40,000 children or more and § 210.18(c)(1) of the final rule retains the 4-year AIMS review cycle. Under the final rule, State agencies are required to conduct administrative reviews of all school food authorities at least once during each 4-year cycle, provided that each school food authority is reviewed at least once every 5 years. The Department agrees with commenters that the 4-year cycle is easier to administer than a 3/5-year cycle and it also has the advantage of being currently in place as a result of the AIMS regulations.

The Department would also like to point out a minor modification to clarify that the on-site portion of the administrative review is to be completed during the school year in which the review was begun. This requirement refers to the actual on-site review activity and not to the corrective action or follow-up review requirements.

Corresponding changes have been made to the proposed § 210.18(c)(3), Problem school food authorities, which would have encouraged State agencies to conduct reviews of problem school food authorities on a more frequent basis. The Department is very supportive of the two commenter recommendations which would result in a 2-year cycle for problem school food authorities and/or large school food authorities. Given commenter concerns regarding scheduling, the need for flexibility and for targeting problem schools, the final rule encourages, but does not require, more frequent reviews of both large school food authorities and of school food authorities which would benefit from a more frequent interval than the minimum 4-year cycle. This provision was moved from the proposed paragraph (c)(3) to paragraph (c)(2) in the final rule. The title of this paragraph was also changed to "Expanded review cycle."

Commenters were generally supportive of the additional flexibility provided in the proposed § 210.18(c)(4), Exceptions, which allowed FNS to approve 1-year extensions to the 4/6-year review interval specified in paragraph (c)(1). The final rule retains this 1-year extension authority with a minor modification reflecting the 5-year review interval specified in paragraph (c)(1). This provision was moved from the proposed paragraph (c)(4) to paragraph (c)(3) in the final rule.

A number of commenters addressed the follow-up review requirements specified in proposed § 210.18(c)(2).

Follow-up reviews. Under the proposed paragraph, State agencies were encouraged to conduct first follow-up reviews in the same school year as the administrative reviews but in no event later than December 31 of the subsequent school year. Additional time would have been provided for the early years of the Coordinated Review Effort. A number of commenters urged the deletion of the sentence which encouraged State agencies to conduct the first follow-up reviews in the same school year as the administrative review. Many of the same commenters recommended changes in follow-up review dates to accommodate the recommended changes in the implementation schedule for the Coordinated Review Effort. Finally, another group of commenters suggested deletion of this paragraph on the basis that follow-up reviews should be related to the corrective action plan—not an FNS prescribed timeframe. The Department elected to eliminate the corrective action plan, as discussed in § 210.18(l) of the preamble, making this suggestion obsolete.

The final rule retains the sentence which encourages State agencies to conduct the first follow-up review in the same school year as the administrative review. The Department believes that since this is solely a recommendation and not a requirement, those State agencies unable to do so will not be adversely affected. Since the phased implementation of the Coordinated Review Effort should provide sufficient time for an orderly implementation, the proposed complexities which provided additional time to conduct follow-up reviews in the early years of Coordinated Review were deemed unnecessary. Thus, the final rule eliminates the additional time allowed for follow-up reviews and requires all first follow-up reviews to be conducted no later than December 31 of the school year following the administrative review. The follow-up review requirements as proposed were found in paragraph (c)(2). The final rule presents these requirements in paragraph (c)(4).

Scheduling School Food Authorities

The proposed § 210.18(d)(1), Schedule of reviews, would have required State agencies to submit the anticipated schedule of school food authority reviews at the beginning of each 3/5-year review cycle. The schedule of reviews would have included the names of the school food authorities and the expected year of review. In addition, State agencies would have been required to update the schedule of

reviews annually. A number of commenters found this to be an onerous reporting burden.

Based on the information provided by the commenters, the final rule deletes the proposed requirement and instead § 210.18(d)(1) requires State agencies to inform FNS of the anticipated schedule of reviews, upon request. Thus, as FNS is preparing its schedule of reviews, it will contact the State agency to discuss a schedule which will prevent duplication of reviews.

In order to prevent overlapping review activity, the proposed § 210.18(d)(2), Reporting follow-up review activity, would have required the State agency, within 30 days of the completion of an administrative review, to notify FNS of the names of those large school food authorities in need of a follow-up review. A number of commenters suggested that this provision increases State agency reporting and paperwork activities and should be deleted. Other commenters suggested that the follow-up activity should be reported on an annual or semi-annual basis.

Section 210.18(d)(2) of the final rule requires that, at such time as the State agency determines that a follow-up review is needed, the State agency shall notify FNS of the names of those large school food authorities in need of a follow-up review. At some time in the future, the Department may find that less frequent reporting is sufficient. However, for the present, timely reporting is imperative since FNS expects to assume an important role in follow-up reviews of large school food authorities.

Proposed § 210.18(d)(3), Exceptions, generated a lot of confusion. The proposal stated that in any school year in which FNS or the Department's Office of Inspector General conducted a review or investigation in accordance with § 210.19(a)(4) (§ 210.18(e) of existing regulations), the State agency shall delay conduct of the administrative review. The Department reminds commenters that reviews or investigations conducted under the authority of § 210.19(a)(4) are those prompted by complaints received or irregularities noted. Generally, these are for serious Program violations, or fraud or criminal activities. The Department believes it would be duplicative for a State agency to conduct an administrative review in a situation as described. Rather, the Department would prefer that the school food authority in question had an opportunity to improve Program operations, and the State agency's administrative review could confirm whether Program operations were in compliance with

Program requirements in the subsequent school year. The Department recognizes the need for some flexibility in this area therefore, under the final § 210.18(d)(3) the State agency is required, unless otherwise authorized by FNS, to delay conduct of a scheduled administrative review until the following school year.

Number of Schools to Review

The proposed § 210.18(e), Number of schools to review, would have required State agencies to review all schools meeting any one of the school selection criteria specified in paragraph (e)(1); provided that the State agency reviewed the minimum number of schools specified in paragraph (e)(2). This number was the same as currently required under AIMS.

A number of commenters expressed concern about the open-ended nature of the provision. Commenters were concerned that such broad criteria might result in many more than the minimum number of schools being reviewed, which would increase the time the State agency must be in the school food authority. This was considered disruptive and capable of draining State agency resources. Some commenters believed schools in low income areas would be singled out over and over again. Several commenters suggested randomly selecting schools, whereas other commenters suggested allowing the State agency to establish its own criteria.

When selecting which schools to review, the school selection criteria specified in proposed paragraph (e)(1) included all elementary schools with a free average daily participation of 100 or more and a free participation factor of 95 percent or more; all secondary schools with a free average daily participation of 100 or more and a free participation factor of 75 percent or more; all combination schools with a free average daily participation of 100 or more and a free participation factor of 85 percent or more; and any school in which the daily lunch counts appeared questionable. If any additional schools needed to be selected in order to meet the minimum required number of schools to review, State agencies would have been directed to use the State agency school selection criteria proposed under paragraph (e)(3).

The final rule revises paragraph (e) to require States to review all schools with a free average daily participation of 100 or more and a free participation factor of 100 percent or more but not less than the minimum number specified in the minimum number of schools table, table A (same as the AIMS, table A). The Department believes that although this

provision retains an open-ended aspect, (i.e., the number of schools with a free average daily participation of 100 and a free participation factor of 100 percent or more), in actuality it will not significantly increase the number of schools to be reviewed since the number of such schools should be relatively small. In fact, based on FNS analysis of reviews conducted during the 1989-1990 School Year, only 1 percent of schools reviewed fell into this category.

Table A, proposed in paragraph (e)(2), was accepted by commenters with one minor suggested change. Commenters recommended the deletion of the word "minimum" from the table heading to convey that the State agency has the prerogative to review additional schools as resources are available. The final rule does not effect a change to the table since the use of the word "minimum" is intended to allow State agencies to review more than the minimum required by Program regulations. The final rule redesignates this paragraph as paragraph (e)(1).

In addition to paragraph (e)(1) which requires State agencies to include all schools with a free average daily participation of 100 or more and a free participation factor of 100 percent or more, paragraph (e)(2) presents the school selection criteria. Analysis of reviews conducted during the 1989-1990 School Year show that on average higher dollar claims are produced in elementary schools with a 97 to 100 percent free average daily participation factor, combination schools with 87 to 100 percent free average daily participation factor, and high schools with 77 percent free average daily participation factor. Therefore, in selecting additional schools to meet the required minimum number of schools, the following criteria shall be followed: Elementary schools with a free average daily participation of 100 or more and a free participation factor of 97 percent or more; secondary schools with a free average daily participation of 100 or more and a free participation factor of 77 percent or more; and combination schools with a free average daily participation of 100 or more and a free participation factor of 87 percent or more.

Selection of additional schools to meet the minimum requirements, shall be made on the basis of State agency selection criteria which may include low participation schools, recommendations from food service directors, or any school in which the daily lunch counts appear questionable. The school selection criteria set forth in paragraph (e)(2) of the final rule combine the

provisions of the proposed paragraphs (e)(1) and (e)(3), modified as described above. Readers should also note that the proposed school selection criterion which would have required the selection of any school in which the daily lunch counts appeared questionable was moved from the required school selection criteria to an example of State agency developed criteria.

The Department believes that the school selection provisions contained in this final rule strike a balance between the need to identify and review schools with a higher likelihood of problems and the need for State flexibility in school selection. Based on Federal Review data available, the Department anticipates that, in approximately 75 percent of the school food authorities reviewed, State agencies will be able to select one or more schools for review based on State selection criteria. In many school food authorities, the State agencies will be able to select the single school that will be visited.

Proposed paragraph (e)(4) would have allowed FNS to authorize State agencies to cease review activities prior to reviewing the required number of schools under paragraph (e)(1) when the problems were pervasive. Commenters questioned the intent of this paragraph. A number of commenters suggested that State agencies should be able to address these issues without FNS intervention. Under the proposed rule, the Department intended that State agencies could elect to conduct a full administrative review of a problem school food authority without FNS intervention. If, however, a State agency visited a school food authority and found a large number of schools with problems determined to be significant, the State agency could request to be relieved of its review responsibility so that FNS or OIG could conduct a review or investigation. This provision has been retained at § 210.18(e)(3) of the final rule.

Scope of Review

Proposed § 210.18(f)(1), Review form, would have required State agencies to use the review form developed by FNS in cooperation with the individual State agencies. State agencies would have been authorized to supplement to the review form, as needed. A large number of comments addressed the use of a national review form. Many suggested that the Federal forms should be streamlined. Others argued that the State agencies should be responsible for developing their own forms.

To accommodate commenter concerns, paragraph (f)(1) continues to require State agencies to use the

administrative review form prescribed by FNS for the critical areas of review. This will ensure consistent review activities in the critical areas. However, State agencies may use their own administrative review forms for the general areas of review.

In proposed § 210.18(f)(2), Review period, the review period was defined to cover, at a minimum, the most recent month for which a Claim for Reimbursement was submitted in the current school year. Commenters had a problem with the phrase "in the current school year," since this would effectively prohibit reviews in September or October, thus losing 2 of the 9 months available for reviews.

The Department recognizes the workload implications of limiting the review period in the current school year. In order to provide more flexibility in this area, the final rule revises this provision to eliminate the reference to current school year operations. The Department encourages State agencies to limit their reviews to current school year operations. To do otherwise would result in a review of the previous year's free and reduced price applications which are not reflective of current operations. Furthermore, if fiscal action were required, use of a review period from the preceding school year would result in fiscal action being extended back to the beginning of the preceding school year or that point in time when the infraction first occurred.

Proposed § 210.18(f)(2) also stated that "Subject to FNS approval, the State agency may conduct a review early in the school year, prior to the submission of a Claim for Reimbursement." Commenters recommended removing the phrase "Subject to FNS approval". The final rule retains the required FNS approval for reviews conducted prior to the submission of a Claim for Reimbursement. The Department wants to retain approval for this provision to ensure it is limited to critical situations in need of technical assistance.

To ensure a standard level of review activity, the final rule also requires in both instances that the review period covers at least 10 operating days.

In proposed § 210.18(f)(3), Audit findings, the State agency would have been authorized to use any recent and currently applicable findings from Federally-required audit activity or from any State-imposed audit requirements. Such findings could have been used if they pertained to the reviewed school or the overall operation of the school food authority and they were relevant to the review period. A number of commenters recommended deleting the wording "and they are relevant to the review period".

The final rule retains the provision as proposed. If the findings are not relevant to the review period, the Department cannot support their use.

Critical areas

Performance Standard 1

Proposed § 210.18(g)(1), Performance Standard 1, described the scope of review for Performance Standard 1 ("Each child's eligibility for free and reduced price lunches is correctly approved or denied in accordance with the applicable provisions of 7 CFR part 245"). In the case of the application process, the State agency would have been required to evaluate whether each child's application was complete and correctly approved or denied in accordance with 7 CFR part 245. Since a review of each child's application for the current school year might constitute a review burden, this proposal would have continued to authorize State agencies to review a statistically valid sample of applications as authorized under AIMS.

In those cases where the local food stamp or Aid to Families with Dependent Children (AFDC) agency certifies that a child is a member of a currently certified food stamp household or AFDC assistance unit, State agencies would have been required to evaluate the direct certification process. Specifically, the proposal would have required the State agency to determine that the certification from AFDC or the Food Stamp Program is official; all the information required under § 245.8 is complete; such children were enrolled in the reviewed school during the review period; and there is a system in place to update eligibility status resulting from a household's decision to decline school meal benefits or any notification from the household that it is no longer certified to receive food stamp or AFDC benefits.

In addition to determining whether the eligibility determinations are correctly approved or denied, the proposal would have required the State agency to ensure that the previous year's eligibility determinations are not used after 30 operating days following the first day of school, or a shorter period established by the State agency.

A number of commenters pointed out that reviewing all applications back to the beginning of the school year is a difficult and onerous burden on the State agency as well as on the school food authority, particularly in districts with seasonal labor and high immigrant populations. Commenters recommended limiting the application review to those

applications effective for the review period.

Initially, the Department was concerned that commenters' recommended approach would result in little if any attention being paid to the denial process. However, given the obvious benefits in workload reduction and in diminishing the complexity of the review process, the Department concluded that a significant revision in the critical areas could accommodate commenters' concerns while retaining the integrity of the review of the denial process. To this end, Performance Standard 1 has been incorporated into Performance Standard 2 in the final rule. The review of the application process occurs as an integral part of a review of the determination of the number of children eligible for free and reduced price lunches for the review period required by proposed Performance Standard 2. Performance Standard 2, as proposed stated: "All free, reduced price and paid lunches claimed for reimbursement are served only to children eligible for free, reduced price and paid lunches, respectively; and counted, recorded, consolidated and reported through a system which consistently yields correct claims." The review of the denial process has been moved to the general area, review of the free and reduced price process. Proposed Performance Standard 2 and Performance Standard 3 are redesignated as Performance Standard 1 and Performance Standard 2, respectively, in the final rule.

To ensure that these changes are uniformly understood, the Department would like to take this opportunity to restate the scope of review for the new Performance Standard 1 as set forth in paragraph (g)(1) of this final rule. Performance Standard 1 states: All free, reduced price and paid lunches claimed for reimbursement are served only to children eligible for free, reduced price and paid lunches, respectively; and are counted, recorded, consolidated and reported through a system which consistently yields correct claims. To review this standard, the State agency shall determine whether the free and reduced price eligibility determinations effective for the review period are correct. In addition, the State agency shall determine that for each day of operation for the review period, the number of free, reduced price and paid lunches claimed for each reviewed school is not more than the number of lunches served to children eligible for free, reduced price and paid lunches, respectively, in those schools for the review period. The State agency shall

also determine that a lunch counting system is being used which accurately counts, records, consolidates and reports the reimbursable lunches served, by type.

In accordance with paragraph (g)(1)(i) of the final rule (i.e., proposed paragraphs (g)(1) and (2)), the State agency shall determine, for each school reviewed, the number of children eligible for free, reduced price and paid lunches, by type, for the review period. To make this determination, the State agency shall review the free and reduced price applications effective for the review period in the reviewed schools to determine whether each child's application is complete and correctly approved in accordance with all applicable provisions of 7 CFR part 245. In lieu of reviewing all free and reduced price applications effective for the review period, the State agency may review a statistically valid sample of those applications, as authorized under the AIMS requirements. The State agency shall also evaluate whether the previous year's eligibility determinations are used after 30 operating days following the first day of school, or for a shorter period as otherwise established by the State agency. In those cases where the local food stamp or AFDC agency certifies that the child(ren) is a member of a currently certified food stamp household or AFDC assistance unit, thus categorically eligible for free lunches, the State agency shall determine that the certification from the Food Stamp Program or AFDC is official; all the information required under § 245.6 is complete; and the children were enrolled in the school under review during the review period.

In addition, the State agency shall evaluate the system for issuing benefits and updating eligibility status by validating the mechanism the reviewed school used to provide benefits to currently eligible children. The State agency shall determine whether the system is adequate and, within the timeframes established under § 210.7(c)(1)(ii)(B), reflects changes due to verification findings, transfers, reported changes in household size or income or, in the case of direct certification, from a household's decision to decline school lunch benefits or from any notification from a household that it is no longer certified to receive food stamp or AFDC benefits.

The State agency shall also determine whether the lunch counting system yields correct claims. At a minimum, the State agency shall determine whether the daily lunch counts, by type, for the

review period are more than the product of the number of children determined by the school/school food authority to be eligible for free, reduced price, and paid lunches for the review period times an attendance factor. If the lunch count, for any type appears questionable or significantly exceeds the product of the number of eligibles, for that type, times an attendance factor, documentation showing good cause must be available for review by the State agency.

The evaluation of the lunch counting system must also include a determination of whether each type of food service line provides accurate point of service lunch counts, by type, and those lunch counts are correctly counted and recorded. If an alternative counting system is employed (in accordance with § 210.7(c)(2)), the State agency shall ensure that it provides accurate counts of reimbursable lunches, by type, and is correctly implemented as approved by the State agency. This evaluation is not intended to review each food service line, but rather to sample a food service line for each type of food service, e.g., salad bar, express line, regular service, etc.

Finally, the State agency must determine whether all lunches are correctly counted, recorded, consolidated and reported by each reviewed school for the day they are served. In addition, for each school food authority reviewed, the State agency shall review lunch count records to ensure that the lunch counts submitted by each reviewed school are correctly consolidated, recorded, and reported by the school food authority on the Claim for Reimbursement.

Merging the two performance standards creates a very detailed scope of review which provides a broader perspective of the overall lunch claiming system. This approach benefits both the State agencies and the Department.

The State agency is required to review those free and reduced price applications current for the review period only, rather than all applications from the beginning of the school year. From the Department's perspective, this approach provides an opportunity to evaluate the certification, counting and claiming process as a whole.

A number of commenters expressed a great deal of concern regarding fiscal action for technical or clerical errors on applications. Based on the application requirements specified in section 9 of the National School Lunch Act (42 U.S.C. 1758), the Department holds the position that, in order to be eligible for Federal reimbursement, an application for free and reduced price benefits from

a household not claiming categorical eligibility must have the household's size and income, the social security number of the adult signing the application, and the signature of an adult household member. Food stamp households and AFDC assistance units may submit abbreviated applications. The Department recognizes the concern caused when fiscal action is taken for an application which is missing the social security number even though the household's income and household size fall within the Income Eligibility Guidelines. To address this problem, § 210.19(c)(6) of the final rule states that when any review or an audit reveals that a school food authority is approving applications which are within the Income Eligibility Guidelines issued by the Department but are missing the documentation specified under 7 CFR 245.2, (a-4)(3), social security number, and/or (4), signature of adult household member, the State agency need not disallow payment or collect an overpayment arising out of this situation, provided that the school food authority collects the missing information. State agencies will be expected to establish deadlines for supplying this information as part of the school food authority's required corrective action.

Commenters also expressed concern regarding the specificity of the procedures required to review the lunch counting and claiming system. The Department believes that the lunch counting and claiming system is interrelated, with each aspect fully dependent upon the accuracy of the others. The degree of specificity in the review process reflects the interrelationship among the aspects of the counting and claiming system and serves to ensure uniformity of reviews.

The Department would, however, like to alleviate some of the concern regarding one aspect of the process, i.e., comparing the daily meal counts to attendance adjusted eligibles. If some daily meal counts exceed the attendance adjusted eligibles, the performance standard has not necessarily been violated. The comparison is simply one of several tests of a meal count system to evaluate whether the system consistently yields correct claims. The degree of the difference and documentation of good cause for the difference both must be considered as well.

Performance Standard 2

The proposed § 210.18(g)(3), Performance Standard 3 (Lunches claimed for reimbursement within the school food authority contain feed

items/components as required by Program regulations), would have required the State agency, on the day of review, to observe the serving lines to determine whether all required food items/components were offered, and to observe a significant number of Program lunches counted at the point of service for each type of serving line to determine whether those lunches contained the required number of food items/components. In addition, the State agency would have been required to review production records and menus for the review period to determine whether all required food items/components had been offered.

A large number of commenters took issue with the use of production records to determine whether all food items/components have been offered. The Department believes that many commenters may have misunderstood the Department's intent. The Department expected the State agency to look at the production records, in conjunction with the menu records, to determine if, perhaps, only one vegetable had been made available for service one day, or if a non-creditable food item had been served one day in the place of a required food item or component. A number of commenters recommended that the Department delete the reference to production records but retain the review of menu records. Based on commenter concerns, the final rule deletes the reference to production records as a monitoring tool in the review of Performance Standard 2.

General areas

The proposed § 210.18(h), General areas of review, identified ten areas for review: The free and reduced price process, food quantities, competitive foods, use and storage of donated foods, nonprofit school food service, civil rights, procurement practices, food service management companies, monitoring responsibilities, and reporting and recordkeeping. A number of commenters recommended deleting the general areas; others suggested that general review areas should be left up to the States to monitor on State forms. Another recommended approach would have the State agency review these areas during administrative reviews using State agency policy and procedures and the State agency's review form. As mentioned under the discussion of § 210.18(f)(1), the final rule limits the FNS standard review form to the critical areas. State agencies may use their own administrative review form or the prototype form to be

developed by FNS to cover the general areas of review.

The proposed § 210.18(h)(1), Free and reduced price process, specified seven areas relating to the free and reduced price application process to be covered on an administrative review. The first area would have required the State agency to review the implementation of the free and reduced price policy statement to ensure it is implemented as approved. The second and third area would have required the State agency to evaluate whether the required minimum number of applications were verified and whether the applications were selected in accordance with the provisions of 7 CFR part 245. The fourth area would have required the State agency to establish whether verification was completed by December 15 or that a good faith effort would result in compliance with 7 CFR 245.6a if the review occurred before the December deadline, and the fifth area would have required the State agency to confirm that the verification process was completed for each application verified by the reviewed schools. The sixth area would have evaluated whether verification records were maintained as required, and the seventh area would have determined that for each reviewed school, the lunch count system would not overtly identify children eligible for free and reduced price meals. A number of commenters recommended deleting this paragraph while a larger number of commenters recommended replacing the second through sixth areas with one provision which would review the implementation of the verification process to ensure that it is implemented as specified in 7 CFR 245.6a.

The final rule retains the provisions of paragraph (h)(1) as proposed. Since the Department has left the review form for general areas to the discretion of State agencies, it is imperative that State agencies be provided substantive direction regarding those areas the Department believes to be essential to the review. Further, the final rule expands on the areas of review to include an eighth requirement in paragraph (h)(1)(viii) of this section. Under that paragraph, the State agency is required to review a representative sample of denied applications to evaluate whether the determining official correctly denied applications for free and reduced price meals. This provision was proposed under the scope of review for proposed Performance Standard 1 (proposed § 210.18(g)(1)(i)). This final rule consolidates Performance Standard 1 and Performance Standard 2, effectively limiting reviewed

applications to those effective for the review period. To ensure sufficient review of the denied applications, this final rule requires a review of a representative sample of the denied applications under the general area of review.

The proposed § 210.18(h)(2), Food quantities, would have required the State agency to observe a significant number of Program lunches counted at the point of service for each type of serving line to determine whether those lunches appeared to provide food items/components in the quantities required under § 210.10. If visual observation suggested that the quantities were insufficient, the State agency would have been required to review the school's production and participation records for each day of the review period to determine that required amounts of food were available for service. A number of commenters recommended deleting this section, whereas other commenters recommended that the requirement to review the school's production records be deleted.

The Department cannot support the deletion of this area of review. The meal pattern in § 210.10 provides the minimum quantities for each age/grade grouping. Given the fact that a school lunch is designed to meet one-third of the Recommended Dietary Allowances over a period of time, the Department is resolved to make every effort to provide nutritious lunches to children each school day. The Department recognizes that food service is an inexact science and, when combined with the offer versus serve provision, it is difficult to monitor. For this reason, the final rule implements the commenters' recommendation to remove the reference to the review of production and participation records and instead requires the school food authority to provide documentation that the required amounts of food were available for service each day of the review period.

Proposed § 210.18(h)(3), Competitive foods, would have required the State agency to determine that when competitive foods are sold in the food service area during the lunch period, that such foods do not fall under the category of food of minimal nutritional value and that the income from the sale of allowable competitive foods accrues as specified in § 210.11(b). A large number of comments were received expressing concerns regarding the competitive food requirements; a much smaller number addressed the monitoring aspects of the proposal. Based on the diverse concerns and

situations described, the Department determined to eliminate review of competitive foods from the general areas, and allow State agencies to continue monitoring this area with the State agency review procedures currently in place.

Proposed § 210.18(h)(4), Use and storage of donated foods, would have required the State agency to determine whether the school food authority accepted and used foods donated by the Department in quantities that are efficiently utilized without waste by the nonprofit school food service, whether storage facilities meet the provisions of 7 CFR 250.14, and whether the use of donated foods is limited to the nonprofit school food service. A large number of commenters urged the Department to eliminate the review of donated foods, since this area is (or should be) reviewed by the State distributing agency. Given the overlapping responsibilities between the State education agency and the State distributing agency, the Department has decided to eliminate this provision from the final rule. The Department would, however, strongly encourage State agencies to work with the State distributing agency or, if the State agency is the distributing agency, to ensure the use and storage of donated foods is monitored adequately.

In proposed § 210.18(h)(5), Nonprofit school food service, the State agency would have been required to ensure that: the school food authority maintained separate and distinct nonprofit school food service accounting; records of income and expenditures were included in the nonprofit school food service account; revenues were used in accordance with § 210.14(a), net cash resources did not exceed the specified amounts, and nonprogram lunches were priced in accordance with FNS requirements. Commenters pointed out that this review requirement is, for the most part, duplicative of the A-128 audit requirement and therefore should be deleted.

The final rule removes this provision from the general areas since the Department considers the A-128 audit coverage to be adequate and since it may require an area of expertise unavailable to the State agency during a review. Removal from the general areas does not, however, suggest that this area can be dismissed. The provisions proposed in paragraph (h)(5) were based on § 210.18(b) and § 210.19(a) of existing Program regulations. The final rule consolidates these provisions into § 210.19(a)(1), thus retaining the State

agencies' responsibility to monitor school food authorities' non-profit school food service.

In proposed § 210.18(h)(6), Civil rights, the State agency would have been required to examine the school food authority's compliance with the civil rights provisions specified in § 210.23(b). No comments were received regarding this provision; therefore, the final rule restates this provision at § 210.18(h)(3) as proposed.

In proposed § 210.18(h)(7), Procurement practices, the State agency would have been required to evaluate the school food authority's procurement practices to determine whether the practices comply with § 210.21. Commenters recommended that the Department remove this provision from the general areas of review since evaluating procurement practices is very time consuming.

The Department acknowledges the potential burden imposed by this provision and has removed this provision from the general areas. As with the nonprofit school food service, removal from the general areas does not suggest that this area should not be covered. Section 210.19(a) of the final rule continues to require the State agency to ensure compliance with all Program regulations as part of its general Program management responsibilities.

In proposed § 210.18(h)(8), Food service management companies, the State agency would have been required to determine whether the school food authority fulfilled its responsibilities in accordance with § 210.16, Food service management companies, and to ensure that the food service operation was in conformance with the school food authority's agreement with the State agency. In addition, the State agency would have been required to determine whether the food service management company adhered to the requirements for such contracts as described in § 210.16 and that the school food authority complied with § 210.21. Procurement, in its selection of a food service management company. Several commenters saw this provision as a duplicative review requirement and recommended its deletion. Others requested more Federal guidance in this area. The final rule removes this provision from the general areas of review. Section 210.18(d) of existing regulations sets forth an expanded review requirement for food service management companies. This existing requirement has been retained with one change in § 210.19(a)(5) of the final rule as part of the State agencies' general

Program management responsibilities. State agencies are encouraged to perform the on-site review required by existing regulations as part of reviews conducted under § 210.18 or § 210.18a. The Department has taken under advisement, the requests for additional guidance in this area.

In proposed § 210.18(h)(9), Monitoring responsibilities, the State agency would have been required to evaluate whether the school food authority conducts on-site reviews and monitors claims in accordance with § 210.8(a). This provision was based on § 210.18(h)(1) of existing Program regulations. A number of commenters suggested deletion of this provision to accommodate their recommendation to eliminate the claims editing process as discussed in § 210.8(a) of this preamble. Since the Department determined that this is an essential management function, the final rule retains this provision as proposed.

Proposed § 210.18(h)(10), Reporting and recordkeeping, would have required the State agency to determine that the school food authority has an adequate reporting and recordkeeping system and maintains on file the documentation required under 7 CFR parts 210 and 245. Commenters requested a definition of "adequate" and suggested that the State agency be provided the flexibility to determine which areas need to be covered. In deference to commenter concerns, the Department removed the term adequate; however, § 210.18(h)(5) of the final rule continues to require State agencies to evaluate whether the minimum reporting and recordkeeping requirements have been met.

Follow-up Reviews

In § 210.18(i), Follow-up reviews, the proposal would have required all school food authorities found to have a critical area violation in excess of the review thresholds (also specified in that section) to be subject to follow-up reviews. The State agency would have been required to conduct a first follow-up review of any large school and food authority found to have exceeded a review threshold and of 25 percent of the small school food authorities found on a review to have violations in excess of the review thresholds. State agencies would have been required to conduct additional follow-up reviews of any school food authority which had a critical area violation exceeding a review threshold on the previous follow-up review. Commenters believed that reviewing problem school food authorities over and over again would be pointless and would require more staff. Some commenters found this paragraph overly prescriptive and

argued that there would be confusion regarding who is being reviewed on a first review, follow-up review and subsequent reviews.

The Department is firmly committed to re-reviewing problem school food authorities until the problems are resolved. If a critical area violation exists that exceeds the threshold for a performance standard, the State agency must ensure that the problem has been resolved. As the commenters pointed out, this provision has the potential for increased workload; however, the Department is confident that the modification in the critical areas of review and the FNS review activity will reduce the burden. Therefore, the final rule restates the proposed provisions with only minor technical changes to reflect the consolidation of proposed Performance Standards 1 and 2.

Selection of Small School Food Authorities

In proposed § 210.18(i)(1), Selection of small school food authorities, the State agency would have been required to select for follow-up reviews those school food authorities which have the most serious problems including, but not limited to, systemic accountability problems, large overclaims, significant lunch pattern violations, etc. Several commenters recommended deletion of this paragraph on the basis that it is redundant. The Department believes it is necessary to ensure clear priorities for follow-up review selection; therefore the final rule restates the provision as proposed.

In proposed § 210.18(i)(2), Selection of schools, State agencies would have been required, on a follow up review, to review at least the minimum number of schools required under proposed paragraph (e)(2), the AIMS table A. State agencies would have been required to select those schools found, on a previous review, to have significant critical area violations. If any additional schools were required to be selected in order to meet the minimum required number of schools to review, the State would have been required to select from those schools which meet State agency-developed criteria. Some commenters suggested that the Department limit the number of schools to be reviewed on a follow-up review to those schools found to have exceeded the thresholds on the first review.

The Department believes that in order to assess whether the school food authority has taken corrective action system-wide, it is necessary to review as many schools as possible; limited, however, to the number of schools required to be reviewed on table A.

Therefore, the final rule retains the provision as proposed, with only technical changes. The minimum required number of schools to review is indicated on the table in paragraph (e)(1), which reflects the current AIMS table A. State agencies are encouraged to review more than the minimum required number of schools. Reviewing any more schools than the minimum number set forth in § 210.18(e)(1) is, however, completely at the State agency's discretion.

The final rule (§ 210.18(i)(2)(i)) provides the State agency with additional relief if the critical area violations responsible for follow-up review activity are limited to school food authority level problems (e.g., centralized application processing or centralized kitchen). In those cases, the State agency may limit its follow-up activity to the school food authority level.

In proposed § 210.18(i)(3), Review thresholds, review thresholds were specified for Performance Standards 1, 2, and 3. These review thresholds were intended to limit follow-up reviews to those school food authorities with serious problems.

The review threshold for Performance Standard 1, as proposed, was "5% or more (but not less than 5) of the initial free or reduced price eligibility determinations reviewed in a school food authority are incorrectly approved or denied." The review threshold for Performance Standard 2, as proposed, was "a number of the reviewed schools in a school food authority, as specified in table B, have an inadequate system for issuing benefits and updating eligibility status and for counting, recording, consolidating or reporting lunches, by type; or the school food authority has an inadequate system for consolidating lunch counts, by type, or for reporting claims." The review threshold for Performance Standard 3, as proposed was "5% or more of the total number of Program lunches observed in a school food authority are missing one or more of the required food items/components."

A large number of commenters believed the review thresholds were too stringent, as proposed. Commenters suggested increasing the review thresholds for proposed Performance Standards 1 and 3 from 5 percent to 10 percent. A number of commenters suggested increases to the review threshold for proposed Performance Standard 2 which would result in alterations to table B. A number of commenters suggested that only problems identified as system errors and

not clerical errors should be considered in determining whether a review threshold had been exceeded.

The final rule makes a number of revisions to paragraph (i)(3) to accommodate commenter suggestions. The final rule increases the review threshold for the proposed Performance Standards 1 and 3 (designated as Performance Standards 1 and 2, respectively, in the final rule) from 5 percent to 10 percent. The final rule also provides an increase in the review threshold for the proposed Performance Standard 2 (designated as Performance Standard 1 in the final rule) by adjusting table B, as recommended, by adding one school to the number violating Performance Standard 1 for each category exceeding 5 schools. Table B reads as follows in the final rule:

TABLE B (§ 210.18)

Number of schools reviewed	Number of schools violating performance standard ¹
1 to 5.....	1
6 to 10.....	2
11 to 20.....	3
21 to 30.....	4
31 to 40.....	5
41 to 50.....	6
51 to 60.....	7
61 to 70.....	8
71 to 80.....	9
81 to 90.....	10
91 to 100.....	11
101 or more.....	11

¹ 11 plus the number identified above for the appropriate increment.

Finally, the final rule makes several technical changes to the review threshold to accommodate the consolidation of proposed Performance Standards 1 and 2. The review threshold now states "(A) a number of the reviewed schools in a school food authority, as specified in table B, have an inadequate system for certification, issuing benefits or updating eligibility status; or for counting, recording, consolidating or reporting lunches, by type; or (B) the school food authority has an inadequate system for consolidating lunch counts, by type, or for reporting claims; or, if applicable, for certification, issuing benefits, or updating eligibility status. At the school and school food authority level, a system for certification, issuing benefits or updating eligibility status is inadequate if 10% or more (but not less than 10 lunches) of the free and reduced price lunches claimed for the review period (for any school reviewed) are claimed incorrectly due to errors of certification, benefit

issuance or updating of eligibility status."

Readers should note that while the review threshold for new Performance Standard 1 is designed to reflect the consolidation of proposed Performance Standard 1 and proposed Performance Standard 2, two significant changes have occurred. First, the review threshold has been separated into two parts, one for the school level, and the other for the school food authority level. Second, the trigger for an inadequate certification system will lead to a follow-up review only in cases where there are major certification problems.

Under the new threshold, the wording "10% or more (but not less than 10 lunches) of the free and reduced price lunches claimed for the review period (for any reviewed school) are claimed incorrectly due to errors of certification, benefit issuance or updating of eligibility status.", is expected to result in only those applications miscategorized on the basis of household size and income data or those applications with uncorrected technical errors to trigger the follow-up threshold.

In proposed § 210.18(i)(4), Scope of follow-up reviews, the State agency would have been encouraged to review all of the critical and general areas of review for those schools visited on a follow-up review but which were not reviewed during the initial review. At a minimum, the State agency would have been required to: review the critical areas for which the review thresholds were exceeded by the school food authority on a previous review; determine whether corrective actions were taken within the specified timeframes; evaluate whether these corrective actions resolved the problems; and on a first follow-up review, evaluate the certification, count and milk/meal service procedures for those schools selected for a first follow-up review and participating in the School Breakfast Program and/or the Special Milk Program or offering snacks in after hour care programs under the National School Lunch Program. Commenters argued that adding schools to follow-up reviews that were not initially reviewed is inappropriate and could result in reviewers returning again and again. Commenters also questioned what notification procedures would be needed for schools being reviewed for the first time. A large number of commenters recommended deleting the review of the School Breakfast Program, the Special Milk Program and the meal supplements in after hour care programs since it goes beyond the scope of the

legislation authorizing a unified review system for the lunch program.

The final rule restates the provisions of paragraph (i)(4) essentially as proposed. The Department firmly believes that on follow-up reviews, the State agency should review not only those schools found to have significant critical area violations, but also schools that were not previously reviewed since it is imperative to evaluate whether corrective actions have been made system-wide. (This would be required only when the minimum number of schools to be reviewed exceeded the number of schools found to have significant critical area violations on the prior review.) The Department also believes it would be irresponsible to ignore the operations of the other child nutrition programs in a school food authority which has demonstrated problems in a critical area, particularly, since the final rule is limited to only two performance standards and has increased follow-up review thresholds. The final rule does, however, provide relief to State agencies which elect to evaluate the certification, count and milk/meal service procedures for other child nutrition programs during the administrative review. If a State agency elects to perform this evaluation of other child nutrition programs during the administrative review, it would not be required to do so again during a follow-up review.

The Department would like to take this opportunity to point out that if a school incorrectly approves an application for free or reduced price meals and based on that application, incorrectly claims reimbursement for lunches and breakfasts, that school has received breakfast payments and lunch payments which it did not earn. Clearly, unearned payments under both programs are subject to recovery.

The final rule does not address the notification of schools to be reviewed. This is an area left solely to the discretion of the State agency. There is nothing in this rule which would change any existing State agency procedures for notifying schools on either the administrative review or on a follow-up review.

Two proposed provisions, § 210.18(i)(5), Critical area violations identified in a follow-up review, and § 210.18(i)(6), General area violations identified in a follow-up review, specified the required resolution for critical and general area violations identified on a follow-up review. For the most part, commenters urged deleting withholding of payment as one of the required resolutions for non-compliance

on a follow-up review. A number of commenters were also concerned that when a new critical area violation observed on a follow-up review exceeds a review threshold, one of the resolutions, i.e., conducting a second follow-up within 6 operating months of the first follow-up review is virtually impossible. One commenter recommended that, if there are critical area violations in a follow-up review, FNS should take over all further reviews until that school food authority is proven in complete compliance.

The final rule restates proposed paragraphs (i)(5) and (i)(6) as proposed with minor technical changes, including deletion of references to corrective action plans for consistency with the elimination of the corrective action plan requirements as discussed at § 210.18(1) of the preamble. The Department is concerned that commenters questioned the need for withholding payment in the general situations outlined in paragraphs (i)(5) and (i)(6) of the proposed rule. In the first situation, the State agency is directed to withhold payment when, on a first follow-up review, violations continue to exist even though the school food authority reported those violations as corrected in its documented corrective action. In the second situation, the State agency is required to withhold payment when the school food authority does not provide adequate documented corrective action within the specified timeframes. The reader should keep in mind that § 210.18(k)(1) of the final rule (§ 210.18(k)(3) of the proposal) provides State agencies the authority to extend the timeframes for completing corrective action. The Department believes that withholding of payment is the appropriate course of action to these two situations which can only occur through malfeasance.

The Department is also retaining the provision which would require that when, on a first follow-up review, new critical area violations that exceed a review threshold are found, a State agency must conduct a subsequent follow up review within 8 operating months of the first follow-up review. The reason for requiring the second follow-up within 6 operating months was to provide an opportunity for this review to occur within the school year following the initial follow-up review. The Department would not expect the State agency to have to follow-up within this time-frame very often since this is the third stage of review. If, as the Department expects, it is not a frequent occurrence, then the State agency should be able to adjust schedules

accordingly. No data will be available regarding the effects of the provision for several years. Therefore, the Department would like to assess its effectiveness and if, as commenters suggest, it is difficult to administer, the Department could reconsider it at that point in time.

Finally, the Department would like to strongly encourage State agencies to contact FNS regarding school food authorities with continuing problems. FNS expects to perform follow-up reviews to complement State agency monitoring activity.

Exit Conference and Notification

Proposed § 210.18(j), Exit conference and notification, would have required the State agency to hold an exit conference at the close of the administrative review and of any subsequent follow-up review to discuss the violations observed, the extent of the violations and the corrective action needed to correct the violations. In addition, the State agency would have been required to establish appropriate deadlines for completion of corrective action. After every review, the State agency would have been required to provide written notification of the review findings to the school food authority's Superintendent (or authorized representative). The written notification would have been required to include the review findings, the needed corrective actions, and the deadlines for completing corrective action. The proposal would also have required any corrective action plan and the deadlines for submission to be discussed at the exit conference.

The final rule adopts this provision as proposed with one modification, i.e., the references to the corrective action plan are deleted for consistency with the elimination of the corrective action plan requirements discussed at § 210.18(1) of the preamble. Several commenters did suggest that the exit conference achieved its objective best when a senior school district official is present. While the Department concurs that elevating the exit conference would achieve the fullest benefit, it may not always be possible. Thus, while the Department would urge all State agencies to have a senior school district official present at the exit conference, the Department does not believe this is a regulatory matter.

Other commenters expressed concern that requiring the reviewer to identify the actions needed to correct the violations and to establish the timeframes for corrective action was too great a responsibility at that point in time. The Department concurs with

commenters' concern, and has further modified the requirement so that the reviewer provides a preliminary assessment of corrective actions needed and discusses appropriate deadlines for completion of the corrective action. This preliminary assessment will be followed up by a written notification of review findings that includes the needed corrective actions and the deadlines for completion of the corrective action. The specific corrective actions and deadlines and any potential fiscal action must be included in the State agency's written notification following the exit conference.

Corrective Action

In proposed § 210.18(k), Corrective action, corrective action would have been required for any violation under either the critical or general areas. Corrective action would also have been applied to all schools in the school food authority to ensure that previously deficient practices and procedures were revised system-wide.

Under proposed paragraph (k)(1), if a school food authority verified less than the required minimum number of applications, the State agency would have required the school food authority to complete the required number of verifications plus three times the deficient number of verifications within 30 operating days of the review. In addition, failure to complete the required additional verifications would have resulted in withholding payment. A large number of commenters found this provision to be punitive and an unnecessary burden on the school food authority and the families that would be affected. Based on the large number of commenters addressing this issue and the strong sentiments expressed, the Department has deleted this provision from the final rule. The Department would, however, like to remind readers that the general provisions of paragraph (k) continue to apply. Corrective action is required for any violation, including verification deficiencies, and it must be applied to all schools in the school food authority.

Under proposed paragraph (k)(2), corrective actions were specified in the event that net cash resources exceed 3 months' average expenditures for the school food authority's nonprofit school food service or such other amount as may be approved by the State agency. A review of net cash resources and corrective action is required under the existing § 210.18(b) of Program regulations. The proposed rule moved this provision and a related provision at § 210.19(a) of the existing regulations to

the general areas of review with corrective actions specified under paragraph (k)(2). Based on commenter concerns discussed above in § 210.18(h)(5) of the preamble, this area is no longer covered as a general area. These provisions are moved in the final rule to § 210.19(a), as part of the general Program monitoring requirements, and the corrective actions listed in proposed § 210.18(k)(2) are moved to that § 210.19(a) accordingly.

Proposed paragraphs (k)(3), Extensions of the timeframes, and (k)(4). Documented corrective action, are redesignated as paragraphs (k)(1) and (k)(2) in the final rule and restated essentially as proposed. The few concerns expressed by commenters were related to the paperwork burden. The Department believes that the elimination of the corrective action plan, as discussed under § 210.18(1) of this preamble, will offset the burden imposed by documentation of corrective action. The Department would like to remind State agencies that it may be more administratively efficient to set the same date for completion of all required corrective actions, if feasible.

Corrective Action Plans

Under the provisions of proposed § 210.18(1), State agencies would have been required to ensure that corrective action plans were completed by all school food authorities which exceed one or more of the critical area review thresholds. A large number of commenters recommended deleting the corrective action plan. The Department has eliminated the requirement for corrective action plans in the final rule but encourages States to use this technique whenever appropriate. The Department wishes to emphasize that deletion of the corrective action plan does not diminish the necessity of achieving corrective action for identified deficiencies. Corrective action and documented corrective action continue to be required for all violations of critical or general areas by § 210.18(k) of the final rule. As a result of this change, all subsequent paragraphs in § 210.18 have been redesignated.

Withholding Payments

Under proposed § 210.18(m). Withholding payment, the State agency would have been directed to withhold payment if (1) the State agency did not receive a corrective action plan within the specified period of time; (2) the corrective action plan did not adequately reflect the corrective actions specified during the exit conference or in follow-up correspondence; (3) corrective action was not completed or

documented corrective action was not provided within the timeframes established during the exit conference, or as otherwise extended by the State agency; (4) the appropriate number of corrective action verifications were not conducted on time; or (5) on a follow-up review, the State agency found that corrective actions were not taken as specified in the corrective action plan and/or documented corrective action.

Based on changes made in the final rule, i.e., the elimination of the corrective action plan and the verification penalty, items (i), (ii), and (iv) and references to corrective action plans in items (iii) and (v) of the proposed rule have been deleted. While a large number of commenters would have preferred to have withholding of payment as a State agency option, the Department believes that the changes made in paragraph (1) of the final rule (i.e., proposed paragraph (m)) limit withholding of payment to situations where the State agency finds malfeasance.

Under the withholding of payments provision, the school food authority continues to earn program payments for reimbursable lunches served; however, these payments are withheld by the State agency until such time as corrective action occurs. Upon completion of satisfactory corrective action (as verified through documentation of the corrective action and, in certain cases, a follow-up review), payments will be released. Thus, there is no implication for the FNS-10, the report of lunches claimed, by type, since the school food authority continues to provide reimbursable lunches and claim those lunches, by type. Withholding of payments would, however, be reflected as an unliquidated obligation on the quarterly Financial Status Report, SF-269.

Fiscal Action

Under proposed § 210.18(n), Fiscal action, fiscal action would have been required for violations of proposed Performance Standards 2 and 3. Since the findings from a review of proposed Performance Standard 1 would have been used in the computation of fiscal action for proposed Performance Standard 2, no fiscal action would have been separately required for violations of proposed Performance Standard 1. If corrective action verifications occurred after January 1 of each year, the State agency would have computed any needed fiscal action back to the first serving day in January.

Several changes made in the other portions of this final rule have direct bearing on this paragraph. Specifically,

proposed Performance Standards 1 and 2 have been consolidated and redesignated as Performance Standard 1 and proposed Performance Standard 3 has been redesignated as Performance Standard 2. In addition, corrective action verifications are no longer required. These changes reduce paragraph (m) of the final rule (i.e., proposed paragraph (n)) to a simple requirement that fiscal action is required for violations of Performance Standards 1 and 2. Fiscal action shall be taken in accordance with the provisions of § 210.19(c). Commenters took issue with a number of aspects of fiscal action; these comments will be discussed in the preamble under the heading § 210.19(c). Fiscal action.

Miscellaneous Reporting Requirement

Under the proposed § 210.18(o), Miscellaneous reporting requirement, the State agency would have been required to report the results of reviews by March 1 of each school year, on a form designated by FNS. This provision was based on § 210.18(l) of existing Program regulations. A number of commenters observed that the purpose of reporting review results in obscure.

The Department uses this information in making evaluations of Program strengths and weaknesses. This reporting requirement provides the Department with a great deal of information which assists in the exercise of its oversight responsibilities. The Department wishes to emphasize that this reporting requirement is essentially unchanged from that which has been required by AIMS for the last several years. For this reason, proposed paragraph (o) is restated at paragraph (n) of the final rule.

Reporting and Recordkeeping

Proposed § 210.18(p), Summary of reporting requirements, would have summarized the reporting requirements at the State agency level. Proposed § 210.18(q), Recordkeeping, would have set forth the recordkeeping requirements at the State agency level.

Under proposed paragraph (p), four reports were identified: (1) The description of the schedule of reviews for the proposed % year cycle, (2) each year's update of the annual schedule of reviews, (3) the names of large school food authorities exceeding any one of the critical area review thresholds, and (4) the results of reviews by March 1 of each school year on a form designated by FNS. The final rule at paragraph (o) revises proposed paragraph (p) by deleting the first and second reporting requirements based on changes made in

other portions of this rule. Paragraphs (3) and (4) of proposed paragraph (p) are redesignated as paragraph (o)(1) and (o)(2), respectively.

Under proposed paragraph (q), State agencies would have been required to retain records including documentation of reviews, corrective action plans, documented corrective action, and documentation of withholding of payments and fiscal action, including recoveries made. In addition, the State agency would have been required to have on file: (1) Criteria for selecting schools on the first and follow-up reviews; (2) the system for selecting small school food authorities for follow-up reviews; and (3) documentation demonstrating compliance with the statistical sampling requirements identified in § 210.18(g). The proposed provisions were based on § 210.18(m) of existing Program regulations. A number of commenters found paragraph (q) overly prescriptive and redundant.

The Department believes that these requirements are necessary to an effective system, and without this information, it would be difficult for the Department to fulfill its oversight responsibilities. Therefore, the Department has determined to retain these provisions in paragraph (p) (i.e., proposed paragraph (g)) of the final rule, except that the reference to the corrective action plan has been deleted.

FNS Review Activity

In proposed § 210.18(r), FNS review activity, the term "State agency" and all the provisions specified in paragraphs (a)-(h) of this section would have referred to FNS when FNS conducted administrative reviews or follow-up reviews. FNS would have notified the State agency of the review findings and the need for corrective action and fiscal action so that the State agency could pursue any needed follow-up activity. Commenters noted that it is difficult to follow-up on a review performed by another agency.

The Department recognizes the difficulties inherent in following up after another agency. However, the Department is hopeful that over time, with a standard review form for critical areas and written guidance specifying review procedures, these difficulties will be minimized. In addition, when FNS conducts an administrative review, FNS plans to use the State agency's forms to review for compliance in the general areas and other areas of Program compliance. The Department firmly believes that with a cooperative effort on the part of Federal, State and local personnel, the Coordinated Review

Effort can become a unified monitoring system.

Thus, paragraph (q) of the final rule (i.e., proposed paragraph (r)) restates the provisions as proposed with one minor modification. The final sentence is revised to clarify the State agencies' responsibility to pursue any needed follow-up activity.

II. § 210.18a Assessment, Improvement and Monitoring System

In order to provide State agencies with sufficient time for training, development of materials, etc., the final rule provides for a phased implementation of the Coordinated Review Effort. For the school year beginning July 1, 1991, each State agency is required to conduct either administrative reviews as prescribed under § 210.18 or AIMS reviews as specified in § 210.18a. State agencies may also want to consider working with FNS to develop an alternate AIMS system as authorized under § 210.18(j) of the final rule (§ 210.18(n) of existing Program regulations) which would enable the State agency to combine administrative review activities under the Coordinated Review Effort with AIMS activities. As with any State alternate to AIMS, a State agency electing to phase in the provisions of the Coordinated Review Effort through the authority provided under alternate AIMS is required to receive the prior approval of the FNS Regional Office to ensure that the planned School Year 1991-1992 monitoring responsibilities meet Program requirements.

The AIMS provisions will remain in § 210.18a through June 30, 1992, at which time, AIMS will be removed from the regulations. The first required year of the Coordinated Review cycle will begin on July 1, 1992.

Several minor technical changes have been made to AIMS, although all of the changes are non-substantive in nature. The first change results in the redesignation of all the AIMS citations. The second change results in the AIMS definition being removed from § 210.2 and restated in § 210.18a(c).

III. § 210.19 Additional Responsibilities

General Program Management

In the proposed § 210.19(a), General program management, each State agency would have been required to provide an adequate number of consultative, technical and managerial personnel to administer programs and monitor performance in complying with all Program requirements. This proposed provision was abbreviated from § 210.19(a) of existing Program

regulations because the Department moved many compliance activities from the general program management area to the proposed Coordinated Review Effort. Commenters seemed to prefer that these areas be covered by the State agency through existing State agency procedures and not through the Coordinated Review process.

As a result of commenter concerns regarding the scope of review, this final rule reduces the ten proposed general areas of review to 5 areas. In addition, those areas no longer covered under Coordinated Review are restated essentially as they currently exist under Program regulations.

Under the proposed § 210.19(a)(1), Financial management system, the State agency would have been directed to establish a financial management system under which school food authorities shall account for all revenues and expenditures. The system would have been required to permit determination of the nonprofit school food services' net cash resources. The requirement to review net cash resources appeared in proposed § 210.18(h)(5), and in the event corrective action was needed, the required corrective actions were identified in proposed § 210.18(k)(2). Commenters suggested that this area was inappropriately placed under the administrative review.

The Department concurs that this provision might be better monitored by the State agency through other means. Therefore, § 210.19(a)(1) of the final rule restates with one minor modification the net cash resource provision and the corresponding monitoring and corrective actions which appear in § 210.19(a) and § 210.18(b) of existing Program regulations.

Under proposed § 210.19(a)(2), Improved management practices, the State agency would have been required to work with the school food authority toward improving the school food authority's management practices wherever the State agency found poor food service management practices leading to decreasing or low student participation and/or poor student acceptance of the Program or Program foods. This provision was based on § 210.18(c) of existing Program regulations. Several commenters observed that mandating technical assistance is a poor marketing technique. They recommended encouraging State agencies to notify school food authorities on an annual basis as to the technical assistance available to them.

The Department encourages State agencies to notify school food authorities of the technical assistance available to them, but believes that State agencies should use their own mechanisms and schedules for doing so. The Department does, however, believe that it is appropriate for State agencies to offer specific technical assistance when individual problems have been identified. Therefore, the final rule restates the requirement to improve management practices as proposed in § 210.19(a)(2) of the final rule.

Under proposed § 210.19(a)(3), Program compliance, the State agency would have been required to ensure that school food authorities comply with the provisions of part 210. The State agency would have been required to ensure such compliance through audits, reviews, technical assistance, training, guidance materials or by other means. The proposed provision was a restatement of § 210.18(a) of existing Program regulations. One commenter recommended requiring minimum levels of training.

Given the diversity among State agencies regarding resource levels and staffing, the Department does not believe it is feasible to specify minimum levels of training. For this reason, paragraph (a)(3) is set forth in the final rule as proposed.

No comments were received regarding § 210.19(a)(4). Investigations, other than as discussed under § 210.18(e)(4) of this preamble. Therefore, this paragraph is restated with only technical changes.

Under proposed § 210.19(a)(5), Food service management companies, each State agency would have been required annually to review each contract between a school food authority and a food service management company. In addition, § 210.18(h)(8) included food service management companies as a general area of review. Thus under the proposed rule, the State agency would have been required to review each school food authority on a 4 to 6 year cycle for compliance with § 210.16. These proposed provisions were based on § 210.18(d) of existing Program regulations. Commenters recommended limiting the general areas and allowing State agencies to monitor those areas with their own procedures.

The Department concluded that the review of the food service management company would best be served by allowing the State agency to use existing procedures. Thus, as discussed in § 210.18(h)(8) of the preamble, food service management companies has been dropped as a general area of review. The existing requirement for food service management company

review has been retained with one change in § 210.19(a)(5) of the final rule. State agencies are encouraged to perform the on-site review required by existing regulations as part of reviews conducted under § 210.18 or § 210.18a. The Department would like to point out that this review is not an overlapping review requirement but rather a special area to be covered in monitoring those school food authorities with food service management companies. State agencies are encouraged to evaluate a school food authority's compliance with § 210.19(a)(5) during a review conducted under § 210.18 or § 210.18a.

Fiscal Action

Under proposed § 210.19(c), the general principles of fiscal action were set forth. The proposed paragraphs were based on § 210.19(c) of existing regulations. Commenters did not address the specifics of these paragraphs although they did make observations regarding the need for fiscal action in general. The Department has determined to retain these paragraphs as proposed. The specific comments are addressed below.

Under proposed § 210.19(c)(2)(i), the State agency would have been directed to identify the school food authority's correct entitlement and to take fiscal action when any school food authority claimed or received more Federal funds than earned under § 210.7. In order to take fiscal action, the State agency would have been required to identify accurate counts of reimbursable lunches through available data, if possible. In the absence of reliable data, the State agency would have been required to reconstruct the lunch counts in accordance with the procedures established in FNS. Such procedures would have been based on the best available information including participation factors, and data from similar schools in the school food authority, etc. A large number of commenters addressed the provisions of this paragraph. Many commenters suggested that reconstruction should occur only in severe situations where there is a total collapse of the meal count system.

The Department believes that the standards currently utilized to establish the need for reconstruction identify schools with serious meal count deficiencies. In the cases where claims generated by the reconstruction process are relatively small, the Department has provided relief under § 210.19(d) of the final rule. Under that paragraph, State agencies may disregard overpayments identified during any review or audit, where the total is less than \$250.

Further, all school food authorities will be reviewed under Coordinated Review rather than the focused sample utilized by FNS in its Federal Reviews, which should reduce the frequency with which reconstruction is required. Finally, in the majority of school food authorities, State agencies will be able to select some schools for review using State agency criteria. The Department believes the schools selected using State criteria will be less likely to require reconstruction. Therefore, the Department believes that, in general, the standards used for reconstruction are reasonable and that the claims disregard provision contained in this final rule will provide relief.

The Department will also provide additional guidance for evaluating the reliability of any supplemental documentation provided by the school food authority when its lunch count system has initially been found to be unreliable. The Department wishes to emphasize that reconstruction is required only when serious deficiencies are identified in the school's meal count system and is only used to determine a reasonable mean count when the school has failed to fulfill its regulatory obligations. In developing guidance and materials associated with the reconstruction process, the Department will solicit input from individual State agencies' and school food authorities' representatives to make the process of reconstruction as efficient as possible.

The use of participation factors in reconstruction was another area of concern. Some commenters believed only one participation factor would be used. The definition of "participation factor" in both the proposal and this final rule (§ 210.18(b)(7)) allow for separate free, reduced price and paid participation factors to be applied to the number of lunches served. Other commenters argued that the State agency should be allowed to use data from similar schools. Again, both the proposal and this rule allow the State agency to use data from similar schools in the school food authority. In addition, reliable and accurate participation data available from the school in question after corrective action occurs, may be used. Paragraph (c)(2)(i) of the final rule remains essentially as proposed, except for minor revisions made to incorporate the provisions of proposed paragraph (c)(2)(iv) of this section. Proposed paragraph (c)(2)(iv) would have required the State agency to use participation factors when taking fiscal action, including instances in which a school does not have a reliable lunch count system. The overlap of these two

paragraphs may have been, at least in part, responsible for some of the misunderstanding regarding reconstruction.

Under proposed § 210.19(c)(2)(ii), fiscal action would have been extended back to the beginning of the school year or that point in time during the current school year when the infraction first occurred, as applicable. Based on the severity and longevity of the problem, the State agency could have extended fiscal action back to previous school years, as appropriate. A number of commenters recommended changes to the duration of fiscal action. Most of those commenters addressing this issue suggested limiting fiscal action to the review period.

The final rule retains this provision as proposed. The Department is not penalizing a school food authority but rather seeking to recover Federal funds that the school food authority did not earn. For this reason, the final rule retains the requirement to extend fiscal action back to the beginning of the school year or that point in time during the current school year when the infraction first occurred.

The Department recognizes that this position is difficult without relief regarding corrected technical errors on the free and reduced price applications. To provide that relief, § 210.19(c)(6) (§ 210.19(c)(5) of existing Program regulations) of the final rule states that:

(6) *Exceptions.* The State agency need not disallow payment or collect an overpayment arising out of the situations described in paragraphs (c)(6) (i) and (ii) of this section; provided that the school food authority corrects the problem(s) to the satisfaction of the State agency:

(i) when any review or audit reveals that a school food authority is failing to meet the quantities for each food item required under the meal pattern in § 210.10; or (ii) when any review or audit reveals that a school food authority is approving applications which indicate that the households' incomes are within the Income Eligibility Guidelines issued by the Department or the applications contain a food stamp or AFDC case number but the applications are missing the documentation specified under 7 CFR 245.2(a-4)(3) and/or (4).

Additional relief is provided in § 210.19(d) which authorizes State agencies to disregard any overpayment which does not exceed \$250. Further discussion of this provision is provided under § 210.19(d) of this preamble.

Management Evaluations

The proposed § 210.19(d), Management evaluations, would have required each State agency to provide FNS with full opportunity to conduct management evaluations of all State

agency Program operations. In conducting management evaluations or audits for any fiscal year, the State agency, FNS or OIG would have been authorized to disregard any overpayment which did not exceed \$100 or in the case of State agency administered programs, did not exceed the amount established under State law, regulations or procedure as a minimum amount for which claim will be made for State losses. However, no overpayment would have been disregarded where there are unpaid claims of the same fiscal year from which the overpayment could be deducted or there was substantial evidence of violations of criminal law or civil fraud statutes. This provision was based on § 210.19(d) of existing Program regulations. A number of commenters recommended deleting that portion of the regulation which prevents an overpayment from being disregarded where there are unpaid claims of the same fiscal year from which the overpayment can be deducted.

The Department concurs with the commenters' recommendation and also has increased the \$100 disregard to \$250. Thus, the final rule allows the State agency, FNS or OIG to disregard any overpayment if the total overpayment does not exceed \$250 (or, in the case of a State agency claim in a State-administered Program, such other lesser amount established under State law); except that no overpayment is to be disregarded where there is substantial evidence of violations of criminal law or civil fraud statutes.

IV. 8 210.30 Management Evaluations

The proposed § 210.30, Management evaluations, specified FNS responsibilities in conducting management evaluation of each State agency's administration of the National School Lunch Program. When FNS conducted a management evaluation, it would have been required to evaluate local Program operations through observation of State agency reviews, assisting State agencies in local level reviews, conducting reviews independently, or audits. Commenters believed that when FNS conducts a review independently, it will cause confusion at the local level, create a loss of consistency, and create additional problems for State agencies when trying to follow-up on FNS conducted reviews.

The final rule restates the provisions of this section essentially as proposed. The Department intends to work closely with State agencies in determining which reviews FNS should conduct independently and which should be State agency assisted reviews.

V. Miscellaneous Amendments

Sections 210.2/210.18 Definitions

A large number of commenters recommended deleting the proposed definitions of *Attendance factor*, *Average daily participation* and *Participation factor*. The Department believes that the commenters' concerns result from some confusion regarding the use of each definition.

Attendance Factor is used in the claims review process at both the State and school food authority level. At the school food authority level, the daily meal counts by category (free, reduced price, and paid) are compared with the product of the number of eligible by category times the *Attendance factor*. In schools with a high participation rate in any given category, this may identify anomalies occurring in the daily meal counts. The Department recognizes that there will be instances, because attendance and participation vary daily, where the actual meal count in any given category will be greater than this product. However, if there are significant variations between the daily meal counts and this product, and there are no readily apparent reasons for the variations, the school food authority is required to follow-up. Follow-up may also occasionally identify an underclaim. However, no overclaim or underclaim is based solely on the results of the claims review process; rather an overclaim or underclaim is based on the findings of the follow-up activities. The State agency may request school food authorities to update the attendance factor specified in § 210.8(c) on a more frequent basis than annually. School food authorities may elect to use different attendance factors for each building for the claims review process specified in § 210.8(a). The definition of *Attendance factor* has been revised to reflect the ability to update the figure on a more frequent basis and to incorporate the requirement from proposed § 210.8(b)(2)(i) that school food authorities must assume that children eligible for free and reduced price lunches attend school at the same rate as the general school population.

Attendance factor is used by the State agency to evaluate school food authorities' monthly Claims for Reimbursement and to evaluate compliance with Performance Standard 1. During a review of Performance Standard 1, a comparison of the daily meal counts to attendance adjusted eligibles may identify anomalies which the reviewer must look into further. As discussed in § 210.18(g)(1) of the preamble, a school is not considered to

have violated Performance Standard 1 solely on the basis of meal counts which exceed the attendance adjusted eligibles.

Average Daily Participation is a figure used solely in the school selection criteria for the Coordinated Review Effort. *Participation factors* are used in the school selection criteria for the Coordinated Review Effort and to recover overpayments when no reliable and accurate lunch count data is available. The determination of when lunch count data is reliable and accurate is discussed in more detail under § 210.19(c), Fiscal action.

Section 210.5 Payment Process to States

Under proposed § 210.5(d)(1), Monthly reports, the final report (FNS-10) for October would have been required to include the number of children approved for free lunches, and the number of children approved for reduced price lunches, enrolled in participating public schools, private schools, and residential child care institutions, respectively, as of the last day of operation in October. The proposed provision was based on § 210.5(d)(1) of existing Program regulations. Commenters were concerned that data for the last day of operation in October would not be reflective of other days in the month or in other months. They also were concerned about the use of the term "enrolled" since enrollment data is not accurate and generally not available for a specific date. Commenters suggested that the information requested be revised to ask for the highest number of children approved for free and reduced price lunches during the month of October.

Paragraph (d)(1) of the final rule restates the proposed provision with minor modifications to clarify the data requested. One of the changes requires the inclusion of the total number of children enrolled in participating schools and institutions. This information is currently being collected and is not expected to create any new data collection burden. To ensure that the State level claims review process is not burdened by follow-up activity related solely to the October data being out of date, § 210.8(b)(2) of this final rule allows the State agency to use instead data which reflects the total number of children approved for free lunches, the total number of children approved for reduced price lunches, and the total number of children enrolled for a more current month, at its discretion. The Department would like to remind readers, that as with all the claims review activities in this rule, claims are

not adjusted solely on the basis of the claims review activity. It is only through the findings of the follow-up activities that the State agency can determine whether adjustments should be made.

Section 210.7 Reimbursement for School Food Authorities

Under the proposed § 210.7(c)(1), Lunch count system, paragraph (ii) would have required school food authorities to maintain a system to issue benefits and to update the eligibility of children approved for free and reduced price benefits. The system would be required to accurately reflect eligibility status as well as changes to eligibility; and to make the appropriate eligibility changes on a timely basis. Such changes would have been required to be made no later than 3 operating days of the date the school food authority receives official notification of the changes or makes the final decision on a child's eligibility status. A large number of commenters were concerned that 3 operating days was an insufficient period of time to permit school food authorities to comply. Commenters pointed out that it would be particularly difficult in districts with a large number of free and reduced price applications or a high turnover rate. Recommendations for an acceptable timeframe varied widely from 5 days to 1 month. Some commenters suggested deleting a timeframe completely.

Paragraph (c)(1)(ii) of the final rule requires the school food authority to make changes in eligibility which result in increased benefit levels as soon as possible but no later than 3 operating days of the date the school food authority makes the final decision on a child's eligibility status. Changes in eligibility which result in decreased benefit levels shall be made as soon as possible but no later than 10 operating days after the date the school food authority makes the final decision on the child's eligibility status. The Department believes this approach provides the school food authority with the flexibility requested without delaying increased benefits to eligible children. To simplify the regulatory text, the phrase "receives official notification of the change or" was removed. The Department would, however, like to clarify that the 3-day and the 10-day timeframes begin when, for example, the school food authority receives notification of a change from the household whether by phone or in writing, or when a hearing official makes a final decision following the appeals process.

Proposed § 210.7(c)(2), Point of service alternatives, would have allowed State

agencies to authorize school food authorities, on a case-by-case basis, to use an alternative to the point of service lunch count. Any request to use an alternative lunch counting method would have been required to be submitted in writing to the State agency for approval. This proposed provision was based on § 210.7(c) of existing Program regulations. Commenters saw this provision to be an additional paperwork burden at the State and local level. A number of commenters recommended that point of service alternatives should be deleted. Other commenters observed that certain circumstances such as pre-plated meals and no offer-versus-serve lend themselves to alternatives. These commenters suggested that point of service alternatives should be covered in the permanent agreement and updated only if the methods change with the details on point of service alternatives provided in guidance.

The Department agrees that some situations do lend themselves to an acceptable alternative to the point of service lunch count. For this reason, paragraph (c)(2) of the final rule allows State agencies to authorize alternatives to the point of service lunch counts provided that such alternatives result in accurate, reliable counts of the number of lunches served, by type for each serving day. State agencies are encouraged to issue guidance which clearly identifies acceptable point of service alternatives and instructions for proper implementation. These alternatives may be selected without prior approval. In addition, on a case-by-case basis, State agencies may also authorize a school food authority to use a customized alternative to the point of service lunch count; provided that such alternative results in an accurate and reliable lunch count system. Any request to use a customized alternative lunch counting method, which has not been previously authorized, is to be submitted in writing to the State agency for approval.

Section 210.8 Claims for Reimbursement

In proposed § 210.8(a)(1), On-site reviews, the school food authority would have been required to perform no less than one on-site review of each school under its jurisdiction. The on-site review would have been required to take place prior to February 1 of each school year. Further, if the review disclosed problems with a school's meal counting or claiming procedures, the school food authority would have been required to ensure that the school

develops and implements a corrective action plan; and within 45 days of the review, conduct a follow-up on-site review to determine that the corrective action resolved the problems. This proposed provision was based on § 210.8(a)(1) of existing Program regulations. A large number of commenters addressed various aspects of this provision. Some commenters recommended deleting the requirement for on-site reviews. Others suggested limiting the requirement for on-site reviews to those schools which have been identified through the claims review process (edit checks) to have possible errors in their meal count system. A number of commenters recommended deleting the on-site review by February 1 at all schools. Some commenters recommended that the deadline be revised from February 1 to the end of the school year. A number of commenters suggested changing the 45 day timeframe for follow-up reviews to 45 operating days.

The Department is firmly committed to an annual on-site review of each school's lunch counting system prior to February 1. On-site reviews provide the school food authority with an opportunity to ensure that all schools under its jurisdiction have an accurate and reliable lunch counting system. If some schools do not have such a system, the review provides the school food authority with the opportunity to provide technical assistance which should preclude Performance Standard 1 violations at some later date. Thus, § 210.8(a)(1) of the final rule restates the provisions as proposed with some minor modification. The Department did not expand the timeframe for follow-up to 45 operating days since such a change could delay corrective action and any needed technical assistance until too late in the school year.

Proposed § 210.8(a)(2), Edit checks, would have required school food authorities to compare the daily lunch counts against (1) attendance adjusted eligibles, and (2) the preceding month's average daily participation in that school for free, reduced price and paid lunches. This proposed provision was based on § 210.8(a)(2) of existing Program regulations. A number of commenters recommended that both edits be deleted. Others suggested recommending edits, not requiring them. Still others suggested moving the edit requirements to the section on corrective action.

The Department firmly believes that the internal controls, such as the edit requirement, are essential to the good management of the Program in all

schools. Moving the edit process to the section on corrective action would defeat the purpose of an internal control. However, in recognition of commenter concerns, § 210.8(a)(2) of the final rule makes several changes to simplify and reduce the edit process. The edit against the preceding month's average daily participation has been removed. The Department is hopeful that the elimination of the preceding month comparison will result in a better balance between the need for internal controls and workload considerations. In addition, two minor changes were made in the final rule. The term "edit check" is replaced with "claims review process" and the sentence beginning with "When taking attendance factor into consideration * * *" was moved to the definition of *Attendance factor*.

In proposed § 210.8(a)(3), Alternative comparisons, State agencies would have been authorized to approve school food authorities on a case-by-case basis to conduct alternatives data analyses in lieu of the edit checks required under the proposed paragraph (a)(2). A number of commenters addressed this provision, about half of the commenters supported the provision; the other half were in opposition to the provision. The Department decided to retain the provision as proposed in § 210.8(a)(3) of the final rule since it is an option to be implemented at State agency discretion.

In proposed § 210.8(a)(4), Follow-up activity, the body of commenters recommended moving this section to the section on corrective action to correspond to other recommended changes. Since, as described above, the claims review process is retained as an internal control, this paragraph is restated in § 210.8(a)(4) of the final rule as proposed, with one change to clarify the nature of the improvements which may be required.

In proposed § 210.8(b)(2), Claims review process, the State agency would have been required to review each school food authority's Claim for Reimbursement on a monthly basis. The review would have compared the number of free and reduced price lunches claimed each month on each school food authority's Claim for Reimbursement to the number of children approved for free and reduced price lunches enrolled in the school food authority for the month of October times the number of days of operation for the claim month times the attendance factor. The proposed provision was based on § 210.8(b) of existing regulations. As mentioned earlier in the preamble, a number of commenters expressed concerns regarding this

provision. Commenters were concerned that the State agency would be conducting monthly claims reviews on the basis of information that represented only one month, i.e., October. Some commenters recommended a procedure to update the information, other commenters recommended comparing the month's claim to the attendance adjusted eligibles for each month, and one commenter recommended substituting the "previous month" for "October."

The Department has decided to retain the review against October data; however, § 210.8(b)(2) of the final rule also provides State agencies with the opportunity to obtain updated information to lessen the likelihood of any unnecessary follow-up. The final rule has also revised the proposed provision to provide State agencies with additional flexibility in reviewing claims submitted by residential child care institutions.

A new paragraph § 210.8(b)(3), Follow-up activity, has been added in an effort to clarify the purpose of follow-up activity specified in proposed paragraph (b)(2). Commenters were concerned that Claims for Reimbursement would be adjusted solely on the basis of the claims review process. The Department would like to clarify its intent. Corrective action will not be taken solely on the basis of the claims review process authorized under paragraph (b)(2). The claims review process is simply a test of the reasonableness of a claim. If the claim does not appear reasonable, the State agency is required to follow up with the school food authority to find out why. Adjustments to the claim must be based on the actual lunch counts of lunches served, by type, as determined through the follow-up activities.

In proposed § 210.8(b)(3), Corrective action, the State agency would have been required to take corrective action with respect to any Claim for Reimbursement which includes more than the number of lunches served by type, to eligible children. In taking corrective action, State agencies would have been authorized to make adjustments on claims within specified timeframes. Upward adjustments which could not be reflected in the final FNS-10 would not be permitted unless authorized by FNS. Downward adjustments would always have been required. This proposed provision was based on § 210.8(b) of existing Program regulations.

One area of misunderstanding was whether upward adjustments would be made to accommodate review findings.

It has been the Department's policy to allow upward adjustments to Claims for Reimbursement under limited circumstances. However, to ensure no further confusion exists, § 210.8(b)(4) of the final rule adds a statement: " * * * upward adjustments for the current and prior fiscal years resulting from any review or audit may be made, at the discretion of the State agency."

Finally, the proposed § 210.8(c)(2) would have required the State agency to obtain the total number of children approved for free lunches and the total number of children approved for reduced price lunches enrolled in the school food authority as of the last day of operation in October. This proposed provision was based on § 210.8(c) of existing Program regulations. A number of commenters requested changing this provision to the highest number of children approved for free and reduced price lunches for the month of October.

The Department concluded that a "snapshot" of eligibility on one day would be less burdensome than a requirement to obtain the highest number for the month, which would require some comparison to other days in the month. Therefore, this provision is restated as proposed with two minor changes. Section 210.8(c)(2) of the final rule reflects the State agency's authority to collect and update the October data at its discretion, and it also clearly states the requirement to provide the total number of children enrolled. This data has been collected for some time and is not expected to create any new data collection.

Section 210.9 Agreement with State Agency

The proposed § 210.9(b)(18) would have expanded the existing requirement to retain approved and denied free and reduced price applications to include the names of children approved for free meals based on documentation certifying that the child is included in a household currently approved to receive benefits under the Food Stamp or Aid for Dependent Children Programs. The body of comments recommended deleting the term "currently" with respect to the direct certification process. The Department has determined to retain the provision as proposed, with one minor technical correction. The word "correctly" in the first sentence is replaced with "currently" to reflect the language of § 210.18(b)(18) of existing Program regulations. The Department would like to assure commenters that once the school food authority has been provided with the names of children "currently" certified as receiving food stamps or

AFDC, the school food authority need not actively update that list unless the household notifies the school food authority of a change in status or of a declination of benefits.

Section 210.15 Reporting and Recordkeeping

The proposed rule summarized the changes to the reporting and recordkeeping requirements at the school food authority level. A large number of commenters addressed proposed § 210.15. Many of the commenters believed these were additional requirements rather than just a summary of the reporting and recordkeeping requirements identified elsewhere in the regulations. The Department has retained this summary and updated it to correspond to changes made elsewhere in the regulations.

Section 210.24 Withholding Payment

A large body of comments were received concerning § 210.24, Withholding payment. These comments are addressed under § 210.18(m) of the preamble. Based on the Department's resolution in § 210.18(m), § 210.24 remains as proposed.

7 CFR Parts 215, 220, and 235

A number of commenters suggested that the Special Milk Program and the School Breakfast Program should not be reviewed on follow-up reviews. The commenters argued that this goes beyond the legislative mandate to design a monitoring system for the lunch program. As discussed under § 210.18(i) (4) of this preamble, the Department concluded that it would be irresponsible to ignore the operations of the child nutrition programs in a school food authority which has demonstrated problems in a critical area. Therefore, the proposed amendments to 7 CFR parts 215 and 220 have been restated in the final rule essentially unchanged.

No substantive comments, other than changes to correspond to changes made in 7 CFR part 210 were received on the proposed changes to part 235. Therefore, the amendments to 7 CFR part 235 remain as proposed with only minor corresponding changes made.

7 CFR Part 245

In the proposed § 245.6a(c), Verification recordkeeping, school food authorities would have been required to retain all documents submitted by the household in an effort to confirm eligibility or reproductions of those documents. A number of commenters recommended deleting this provision.

The Department believes this information is necessary in order to

evaluate compliance with the verification requirements. However, in order to make this provision less burdensome, § 245.6a(c) of the final rule expands upon this provision to allow the school food authority to make annotations regarding the type of materials submitted and the date(s) submitted in lieu of the actual documents, thus resulting in a reduction in the reproductions needed and/or records retained.

VI. Overview of the Coordinated Review Effort

The Coordinated Review Effort is designed to be a two-part system composed of management evaluations and administrative reviews. Management evaluations will be conducted by FNS, while most of the administrative reviews will be the primary responsibility of the State agency.

The management evaluations will provide for a comprehensive monitoring of each State agency's administration of the National School Lunch Program, including a review of the State agency's compliance with the monitoring requirements. To ascertain the effectiveness of the State agency's administration of the Program, FNS will conduct administrative reviews of school food authority operations as part of the management evaluation process.

FNS may assist the State agency in conducting an administrative review or follow-up review, or may conduct such reviews independently. FNS-conducted reviews will count toward meeting the State agency's review requirements. In all cases, FNS will coordinate school food authority selection to ensure no unintended overlap exists. When FNS conducts an administrative review or follow-up review, FNS will provide the State agency with the review findings to enable the State agency to pursue all needed follow-up activities.

The State agency is required to conduct administrative reviews of each school food authority at least once during each 4-year cycle; provided that no more than 5 years elapses between reviews. The administrative review will focus on "critical areas" and "general areas." The critical areas include two performance standards: One addresses certification, counting and claiming, the other performance standard addresses the meal components. The general areas include the free and reduced price process, food quantities, civil rights, monitoring responsibilities and reporting and recordkeeping. Review of the critical and general areas does not preclude the State agency from

reviewing other aspects of Program operations.

If, during the course of an administrative review, the State agency observes violations of the critical areas, corrective action, documentation of the corrective action and fiscal action are required. If those critical area violations exceeded any one of the specified review thresholds, follow-up reviews would also be required.

If the State agency observes violations of the general areas of review, corrective action and documentation of the corrective action are required. Fiscal action and follow-up reviews are not required for violations of the general areas, although State agencies are encouraged to take fiscal action, where applicable, and conduct follow-up reviews for significant violations of the general areas.

In order to ensure that FNS and the State agency critical area reviews are conducted in the same manner, this rule requires the use of a standard form for the critical areas. FNS will solicit input from individual State agencies and school food authorities, in the development by FNS of a standard form to be used by all reviewers. Each State agency may use its own review form to address the general areas and other areas of program compliance or use a prototype form to be developed by FNS. When FNS conducts an administrative review in accordance with § 210.18, FNS will use the State agency's forms to review for compliance in the general areas.

The Department is committed to both Program integrity and Program improvement. The Department firmly stands behind a commitment to seek corrective action and provide technical assistance. To this end, the Department intends to include State and local personnel in the development of guidance to provide technical assistance, to seek corrective action, and to recover improperly paid federal funds, when appropriate.

List of Subjects

7 CFR Part 210

Food assistance programs, National School Lunch Program, Commodity School Program, Grants programs-social programs, Nutrition, Children, Reporting and recordkeeping requirements, Surplus agricultural commodities.

7 CFR Part 215

Food assistance programs, Special Milk Program, Grant programs-social programs, Nutrition, Children, Milk, Reporting and recordkeeping requirements.

7 CFR Part 220

Food assistance programs, School Breakfast Program, Grant programs-social programs, Nutrition, Children, Reporting and recordkeeping requirements.

7 CFR Part 235

Food assistance programs, National School Lunch Program, School Breakfast Program, Special Milk Program, Reporting and recordkeeping requirements.

7 CFR Part 245

Food assistance programs, Grant programs-social programs, National School Lunch Program, School Breakfast Program, Special Milk Program, Reporting and recordkeeping requirements.

Accordingly, 7 CFR parts 210, 215, 220, 235 and 245 are amended as follows:

PART 210—NATIONAL SCHOOL LUNCH PROGRAM

1. The authority citation for 7 CFR part 210 continues to read as follows:

Authority: The provisions of part 210 issued under sec. 2-12, 60 Stat. 230, as amended; sec. 10, 80 Stat. 889, as amended; 84 Stat. 270; 42 U.S.C. 1751-1760, 1779.

2. In § 210.2:

a. Definition *AIMS* is removed; and
b. New definitions *Attendance factor*, *Average Daily Participation*, and *Days* are added.

The additions read as follows:

§ 210.2 Definitions

Attendance factor means a percentage developed no less than once each school year which accounts for the difference between enrollment and attendance. The attendance factor may be developed by the school food authority, subject to State agency approval, or may be developed by the State agency. In the absence of a local or State attendance factor, the school food authority shall use an attendance factor developed by FNS. When taking the attendance factor into consideration, school food authorities shall assume that all children eligible for free and reduced price lunches attend school at the same rate as the general school population.

Average Daily Participation means the average number of children, by eligibility category, participating in the Program each operating day. These numbers are obtained by dividing (a) the total number of free lunches claimed during a reporting period by the number of operating days in the same period; (b) the total number of reduced price lunches claimed during a reporting

period by the number of operating days in the same period; and (c) the total number of paid lunches claimed during a reporting period by the number of operating days in the same period.

* * * * * *Days* means calendar days unless otherwise specified.

* * * * * 3. In § 210.5, paragraph (d)(1) is amended by removing the second sentence and adding two new sentences in its place to read as follows:

§ 210.5 Payment process to States.

* * * * * (d) * * * * The final reports shall be limited to claims submitted in accordance with § 210.8 of this part. For the month of October, the final report shall include the total number of children approved for free lunches, the total number of children approved for reduced price lunches, and the total number of children enrolled in participating public schools, private schools, and residential child care institutions, respectively, as of the last day of operation in October. * * *

* * * * * 4. In § 210.7, paragraph (c) is revised to read as follows:

§ 210.7 Reimbursement for school food authorities.

* * * * * (c) **Reimbursement limitations.** To be entitled to reimbursement under this part, each school food authority shall ensure that Claims for Reimbursement are limited to the number of free, reduced price and paid lunches that are served to children eligible for free, reduced price and paid lunches, respectively, for each day of operation.

(1) **Lunch count system.** To ensure that the Claim for Reimbursement accurately reflects the number of lunches served to eligible children, the school food authority shall, at a minimum:

(i) Correctly approve each child's eligibility for free and reduced price lunches based on the requirements prescribed under 7 CFR part 245;

(ii) Maintain a system to issue benefits and to update the eligibility of children approved for free or reduced price lunches. The system shall:

(A) Accurately reflect eligibility status as well as changes in eligibility made after the initial approval process due to verification findings, transfers, reported changes in income or household size, etc.; and

(B) Make the appropriate changes in eligibility after the initial approval

process on a timely basis so that the mechanism the school food authority uses to identify currently eligible children provides a current and accurate representation of eligible children. Changes in eligibility which result in increased benefit levels shall be made as soon as possible but no later than 3 operating days of the date the school food authority makes the final decision on a child's eligibility status. Changes in eligibility which result in decreased benefit levels shall be made as soon as possible but no later than 10 operating days of the date the school food authority makes the final decision on the child's eligibility status.

(iii) Base Claims for Reimbursement on lunch counts, taken daily at the point of service, which correctly identify the number of free, reduced price and paid lunches served to eligible children;

(iv) Correctly record, consolidate and report those lunch counts on the Claim for Reimbursement; and

(v) Ensure that Claims for Reimbursement do not request payment for any excess lunches produced, as prohibited in § 210.10(b) of this part, or non-Program lunches (i.e., a la carte or adult lunches).

(2) Point of service alternatives.

(i) State agencies may authorize alternatives to the point of service lunch counts provided that such alternatives result in accurate, reliable counts of the number of free, reduced price and paid lunches served, respectively, for each serving day. State agencies are encouraged to issue guidance which clearly identifies acceptable point of service alternatives and instructions for proper implementation. School food authorities may select one of the State agency approved alternatives without prior approval.

(ii) In addition, on a case-by-case basis, State agencies may authorize school food authorities to use other alternatives to the point of service lunch count; provided that such alternatives result in an accurate and reliable lunch count system. Any request to use an alternative lunch counting method which has not been previously authorized under paragraph (2)(i) is to be submitted in writing to the State agency for approval. Such request shall provide detail sufficient for the State agency to assess whether the proposed alternative would provide an accurate and reliable count of the number of lunches, by type, served each day to eligible children. The details of each approved alternative shall be maintained on file at the State agency for review by FNS.

5. In § 210.8, paragraphs (a), (b), and (c) are revised to read as follows:

§ 210.8 Claims for reimbursement.

(a) *Internal controls.* The school food authority shall establish internal controls which ensure the accuracy of lunch counts prior to the submission of the monthly Claim for Reimbursement. At a minimum, these internal controls shall include: an on-site review of the lunch counting and claiming system employed by each school within the jurisdiction of the school food authority; comparisons of daily free, reduced price and paid lunch counts against data which will assist in the identification of lunch counts in excess of the number of free, reduced price and paid lunches served each day to children eligible for such lunches; and a system for following up on those lunch counts which suggest the likelihood of lunch counting problems.

(1) *On-site reviews.* Every school year, each school food authority with more than one school shall perform no less than one on-site review of the lunch counting and claiming system employed by each school under its jurisdiction. The on-site review shall take place prior to February 1 of each school year. Further, if the review discloses problems with a school's meal counting or claiming procedures, the school food authority shall: ensure that the school implements corrective action; and, within 45 days of the review, conducts a follow-up on-site review to determine that the corrective action resolved the problems. Each on-site review shall ensure that the school's claim is based on the counting system authorized by the State agency under § 210.7(c) of this part and that the counting system, as implemented, yields the actual number of reimbursable free, reduced price and paid lunches, respectively, served for each day of operation.

(2) *School food authority claims review process.* Prior to the submission of a monthly Claim for Reimbursement, each school food authority shall review the lunch count data for each school under its jurisdiction to ensure the accuracy of the monthly Claim for Reimbursement. The objective of this review is to ensure that monthly claims include only the number of free, reduced price and paid lunches served on any day of operation to children currently eligible for such lunches. At a minimum, the school food authority shall compare each school's daily counts of free, reduced price and paid lunches against the product of the number of children in that school currently eligible for free, reduced price and paid lunches, respectively, times an attendance factor.

(3) *Alternative comparisons.* On a case-by-case basis, State agencies may

authorize school food authorities to conduct other data analyses in lieu of those comparisons required under paragraph (a)(2) of this section. State agency approval shall be limited to those alternative analyses which adequately meet the objective of identifying lunch counts that exceed the number of lunches served each day to children currently eligible for free, reduced price and paid lunches. Such alternative analyses shall be approved in writing by the State agency and remain on file at the State agency for review by FNS.

(4) *Follow-up activity.* The school food authority shall promptly follow-up through phone contact, on-site visits or other means when the claims review process described in paragraphs (a)(2) and (a)(3) of this section suggest the likelihood of lunch count problems. When problems or errors are identified, the lunch counts shall be corrected prior to submission of the monthly Claim for Reimbursement. Improvements to the lunch count system shall also be made to ensure that the lunch counting system consistently results in lunch counts of the actual number of reimbursable free, reduced price and paid lunches served for each day of operation.

(5) *Recordkeeping.* School food authorities shall maintain on file, each month's Claim for Reimbursement and all data used in the claims review process, by school. Records shall be retained as specified in § 210.23(c) of this part. School food authorities shall make this information available to the Department and the State agency upon request.

(b) *Monthly claims.* To be entitled to reimbursement under this part, each school food authority shall submit to the State agency, a monthly Claim for Reimbursement, as described in paragraph (c) of this section.

(1) *Submission timeframes.* A final Claim for Reimbursement shall be postmarked or submitted to the State agency not later than 60 days following the last day of the full month covered by the claim. State agencies may establish shorter deadlines at their discretion. Claims not postmarked and/or submitted within 60 days shall not be paid with Program funds unless otherwise authorized by FNS.

(2) *State agency claims review process.* The State agency shall review each school food authority's Claim for Reimbursement, on a monthly basis, in an effort to ensure that monthly claims are limited to the number of free and reduced price lunches served, by type, to eligible children.

(i) The State agency shall, at a minimum, compare the number of free and reduced price lunches claimed to the number of children approved for free and reduced price lunches enrolled in the school food authority for the month of October times the days of operation times the attendance factor employed by the school food authority in accordance with paragraph (a)(2) of this section. At its discretion, the State agency may conduct this comparison against data which reflects the number of children approved for free and reduced price lunches for a more current month(s) as collected pursuant to paragraph (c)(2) of this section.

(ii) In lieu of conducting the claims review specified in paragraph (b)(2)(i) of this section, the State agency may conduct alternative analyses for those Claims for Reimbursement submitted by residential child care institutions. Such alternatives analyses shall meet the objective of ensuring that the monthly Claims for Reimbursement are limited to the numbers of free and reduced price lunches served, by type, to eligible children.

(3) *Follow-up activity.* The State agency shall promptly follow-up through phone contact, on-site visits, or other means when the claims review process suggests the likelihood of lunch count problems.

(4) *Corrective action.* The State agency shall promptly take corrective action with respect to any Claim for Reimbursement which includes more than the number of lunches served, by type, to eligible children. In taking corrective action, State agencies may make adjustments on claims filed within the 60-day deadline if such adjustments are completed within 90 days of the last day of the claim month and are reflected in the final Report of School Program Operations (FNS-10) for the claim month required under § 210.5(d) of this part. Upward adjustments in Program funds claimed which are not reflected in the final FNS-10 for the claim month shall not be made unless authorized by FNS. Except that, upward adjustments for the current and prior fiscal years resulting from any review or audit may be made, at the discretion of the State agency. Downward adjustments in amounts claimed shall always be made, without FNS authorization, regardless of when it is determined that such adjustments are necessary.

(c) *Content of claim.* The Claim for Reimbursement shall include data in sufficient detail to justify the reimbursement claimed and to enable the State agency to provide the Report of School Program Operations required under § 210.5(d) of this part. Such data

shall include, at a minimum, the number of free, reduced price and paid lunches served to eligible children. The claim shall be signed by a school food authority official.

(1) *Consolidated claim.* The State agency may authorize a school food authority to submit a consolidated Claim for Reimbursement for all schools under its jurisdiction, provided that, the data on each school's operations required in this section are maintained on file at the local office of the school food authority and the claim separates consolidated data for commodity schools from data for other schools. Unless otherwise approved by FNS, the Claim for Reimbursement for any month shall include only lunches served in that month except if the first or last month of Program operations for any school year contains 10 operating days or less, such month may be combined with the Claim for Reimbursement for the appropriate adjacent month. However, Claims for Reimbursement may not combine operations occurring in two fiscal years.

(2) *October data.* For the month of October, the State agency shall also obtain, either through the Claim for Reimbursement or other means, the total number of children approved for free lunches, the total number of children approved for reduced price lunches, and the total number of children enrolled in the school food authority as of the last day of operation in October. The school food authority shall submit this data to the State agency no later than December 31 of each year. State agencies may establish shorter deadlines at their discretion. In addition, the State agency may require school food authorities to provide this data for a more current month if for use in the State agency claims review process under paragraph (c)(2) of this section.

6. In § 210.9:

- a. Paragraph (b)(8) is amended by removing the citations "§ 210.24" and "§ 210.25" and adding the citations "§ 210.25" and "§ 210.26", in their places, respectively; and

b. Paragraph (b)(18) is revised. The revision reads as follows:

§ 210.9 Agreement with State agency.

(b) * * *

(18) Maintain files of currently approved and denied free and reduced price applications, respectively, and the names of children approved for free lunches based on documentation certifying that the child is included in a household approved to receive benefits under the Food Stamp or the Aid to Families with Dependent Children

Programs. If the applications and/or documentation are maintained at the school food authority level, they shall be readily retrievable by school;

* * * * *

7. In § 210.16, paragraph (b) is amended by removing the sixth sentence and adding two new sentences in its place, to read as follows:

§ 210.16 Lunch components and quantities.

(b) * * * Production and menu records shall be maintained to demonstrate that the required number of food components and food items are offered on any given day. Production records shall include sufficient information to evaluate the menu's contribution to the lunch pattern specified in paragraph (c) of this section.

* * * * *

8. In § 210.15:

- a. Paragraphs (a)(1) and (a)(3) are revised;
- b. Paragraphs (a)(4) and (a)(5) are removed and paragraphs (a)(6) through (a)(8) are redesignated (a)(4) through (a)(6), respectively;
- c. Paragraphs (b)(1) and (b)(2) are revised;
- d. Paragraphs (b)(3) and (b)(4) are redesignated as paragraphs (b)(4) and (b)(5), respectively, and new paragraph (b)(3) is added;
- e. Newly redesigned paragraph (b)(4) is amended by removing the words "or audit"; and removing the citation "§ 210.18(b)" and adding the citation "§ 210.19(a)" in its place; and
- f. Newly redesigned paragraph (b)(5) is revised. The addition and revisions read as follows:

§ 210.15 Reporting and recordkeeping.

(a) * * *

(1) A Claim for Reimbursement and, for the month of October and as otherwise specified by the State agency, supporting data as specified in accordance with § 210.8 of this part;

* * * * *

(3) A written response to reviews pertaining to corrective action taken for Program deficiencies;

* * * * *

(b) * * *

(1) Documentation of participation data by school in support of the Claim for Reimbursement and data used in the claims review process, as required under § 210.8(a), (b), and (c) of this part;

(2) Production and menu records as required under § 210.10(b) of this part;

(3) Participation records to demonstrate positive action toward providing one lunch per child per day as required under § 210.10(b) of this part;

* * * *

(5) Currently approved and denied applications for free and reduced price lunches and a description of the verification activities, including verified applications, and any accompanying source documentation in accordance with 7 CFR 245.6a of this Title.

§ 210.18 [Redesignated as § 210.18a]

9. Section 210.18 is redesignated as § 210.18a and a new § 210.18 is added to read as follows:

§ 210.18 Administrative reviews.

(a) *Implementation dates.* For the school year beginning July 1, 1992, each State agency shall conduct administrative reviews as prescribed under this section. At State agency discretion, State agencies may begin implementation of the provisions of this section on August 16, 1991, in lieu of implementing the provisions of § 210.18a of this part for school year 1991/1992. FNS review responsibilities are specified under § 210.30 of this part.

(b) *Definitions.* The following definitions are provided in order to clarify State agency administrative review requirements:

(1) *Administrative reviews* means the initial comprehensive on-site evaluation of all school food authorities participating in the Program in accordance with the provisions of this section. The term "administrative review" is used to reflect a review of both critical and general areas in accordance with paragraphs (g) and (h) of this section, and includes other areas of Program operations determined by the State agency to be important to Program performance.

(2) *Critical areas* means the following two performance standards described in detail in paragraph (g) of this section which serve as measures of compliance with Program regulations:

(i) *Performance Standard 1—Certification/Counting/Claiming*—All free, reduced price and paid lunches claimed for reimbursement are served only to children eligible for free, reduced price and paid lunches, respectively; and counted, recorded, consolidated and reported through a system which consistently yields correct claims.

(ii) *Performance Standard 2—Components*—Lunches claimed for reimbursement within the school food authority contain food items/components are required by Program regulations.

(3) *Documented corrective action* means written notification required of the school food authority to certify that the corrective action required for each violation has been completed and to notify the State agency of the dates of completion. Documented corrective action may be provided at the time of the review or may be submitted to the State agency within specified timeframes.

(4) *Follow-up reviews* means any visit(s) to the school food authority subsequent to the administrative review to ensure corrective actions are taken.

(5) *General areas* means the areas of review specified in paragraph (h) of this section.

(6) *Large school food authority* means, in any State:

(i) All school food authorities that participate in the Program and have enrollments of 40,000 children or more each; or

(ii) If there are less than two school food authorities with enrollments of 40,000 or more, the two largest school food authorities that participate in the Program and have enrollments of 2,000 children or more each.

(7) *Participation factor* means the percentages of children approved by the school for free lunches, reduced price lunches, and paid lunches, respectively, who are participating in the Program. The free participation factor is derived by dividing the number of free lunches claimed for any given period by the product of the number of children approved for free lunches for the same period times the operating days in that period. A similar computation is used to determine the reduced price and paid participation factors. The number of children approved for paid lunches is derived by subtracting the number of children approved for free and reduced price lunches for any given period from the total number of children enrolled in the reviewed school for the same period of time, if available. If such enrollment figures are not available, the most recent total number of children enrolled shall be used. If school food authority participation factors are unavailable or unreliable, State-wide data shall be employed.

(8) *Review period* means the period of time covered by the administrative review or follow-up review. The review period is specified in paragraph (f)(2) of this section.

(9) *Review threshold* means the degree of error in a critical area of review which, if exceeded during an administrative review or follow-up review of a school food authority, may trigger a follow-up review of that school food authority.

(10) *Small school food authority* means, in any State, a school food authority that participates in the Program and is not a large school food authority, as defined in this section.

(c) *Timing of reviews.* The first required year of the administrative review cycle shall begin July 1, 1992 and end June 30, 1993. Administrative reviews and follow-up reviews shall be conducted as follows:

(1) *Administrative reviews.* At a minimum, State agencies shall conduct administrative reviews of all school food authorities at least once during each 4-year review cycle; provided that each school food authority is reviewed at least once every 5 years. The on-site portion of the administrative review shall be completed during the school year in which the review was begun.

(2) *Expanded review cycle.* State agencies are encouraged to conduct administrative reviews of large school food authorities and of any school food authorities which may benefit from a more frequent interval than the minimum 4-year cycle required in paragraph (c)(1) of this section.

(3) *Exceptions.* FNS may, on an individual school food authority basis, approve written requests for 1-year extensions to the 5-year review interval specified in paragraph (c)(1) of this section if FNS determines this requirement conflicts with efficient State agency management of the Program.

(4) *Follow-up reviews.* The State agency is encouraged to conduct first follow-up reviews in the same school year as the administrative review; but in no event shall first follow-up reviews be conducted later than December 31 of the school year following the administrative review. Subsequent follow-up reviews shall be scheduled in accordance with paragraph (i)(5) of this section.

(d) *Scheduling school food authorities.* The State agency shall use its own criteria to schedule school food authorities for administrative reviews; provided that the requirements of paragraph (c) of this section are met. State agencies are encouraged to take into consideration the findings of the claims review process required under § 210.8(b)(2) of this part in the selection of school food authorities.

(1) *Schedule of reviews.* To ensure no unintended overlap occurs, the State agency shall inform FNS of the anticipated schedule of school food authority reviews upon request.

(2) *Reporting follow-up review activity.* At such time as the State agency determines that a follow-up review is needed, the State agency shall notify FNS of the names of those large

school food authorities exceeding any one of the critical area review thresholds specified in paragraph (i) of this section.

(3) *Exceptions.* In any school year in which FNS or OIG conducts a review or investigation of a school food authority in accordance with § 210.19(a)(4) of this part, the State agency shall, unless otherwise authorized by FNS, delay conduct of a scheduled administrative review until the following school year. The State agency shall document any exception authorized under this paragraph.

(e) *Number of schools to review.* The State agency is encouraged to review all schools meeting the school selection criteria specified in paragraph (e)(2) of this section. At a minimum, the State agency shall review the number of schools specified in paragraph (e)(1) of this section and shall select the schools to be reviewed on the basis of the school selection criteria specified in paragraph (e)(2) of this section.

(1) *Minimum number of schools.* The State agency shall review all schools with a free average daily participation of 100 or more and a free participation factor of 100 percent or more, but not less than the minimum number of schools illustrated in table A:

TABLE A

No. of schools in the school-food authority	Minimum no. of schools to be reviewed
1 to 5.....	1
6 to 10.....	2
11 to 20.....	3
21 to 40.....	4
41 to 60.....	6
61 to 80.....	8
81 to 100.....	10
101 to more.....	¹ 12

¹ Twelve plus 5 percent of the number of schools over 100. Fractions shall be rounded to the nearest whole number.

(2) *School selection criteria.*

(i) Selection of additional schools to meet the minimum number of schools required under paragraph (e)(1) of this section, shall be based on the following criteria:

(A) Elementary schools with a free average daily participation of 100 or more and a free participation factor of 97 percent or more;

(B) Secondary schools with a free average daily participation of 100 or more and a free participation factor of 77 percent or more; and

(C) Combination schools with a free average daily participation of 100 or more and a free participation factor of 87 percent or more. A combination

school means a school with a mixture of elementary and secondary grades.

(ii) When the number of schools selected on the basis of the criteria established in paragraph (A) through paragraph (C) of this paragraph are not sufficient to meet the minimum number of schools required under paragraph (e)(1) of this section, the schools selected for review shall be selected on the basis of State agency criteria which may include low participation schools, recommendations from a food service director based on findings from the on-site visits or the claims review process required under § 210.8(a) of this part; or any school in which the daily lunch counts appear questionable, e.g., identical or very similar claiming patterns, and/or large changes in free lunch counts.

(3) *Pervasive problems.* If the State agency review finds pervasive problems in a school food authority, FNS may authorize the State agency to cease review activities prior to reviewing the required number of schools under paragraph (e)(1) of this section. Where FNS authorizes the State agency to cease review activity, FNS may either conduct the review activity itself or refer the school food authority to OIG.

(f) *Scope of review.* During the course of an administrative review, each State agency shall monitor compliance with the critical and general areas identified in paragraphs (g) and (h) of this section.

(1) *Review form.* State agencies shall use the administrative review form prescribed by FNS for the critical areas of review specified in paragraph (g) of this section. State agencies may use their own administrative review form for the general areas of review specified in paragraph (h) of this section.

(2) *Review period.*

(i) The review period for administrative reviews and follow-up reviews shall cover, at a minimum, the most recent month for which a Claim for Reimbursement was submitted; provided that such Claim for Reimbursement covers at least 10 operating days.

(ii) Subject to FNS approval, the State agency may conduct a review early in the school year, prior to the submission of a Claim for Reimbursement. In such cases, the review period shall be the prior month of operation in the current school year, provided that such month includes at least 10 operating days.

(3) *Audit findings.* To prevent duplication of effort, the State agency may use any recent and currently applicable findings from Federally required audit activity or from any State-imposed audit requirements. Such findings may be used only insofar as

they pertain to the reviewed school(s) or the overall operation of the school food authority and they are relevant to the review period. The State agency shall document the source and the date of the audit.

(g) *Critical areas of review.* The performance standards listed in this paragraph are deemed critical since compliance in these areas is directly linked to the service of a reimbursable lunch.

(1) *Performance Standard 1 (All free, reduced price and paid lunches claimed for reimbursement are served only to children eligible for free, reduced price and paid lunches, respectively; and are counted, recorded, consolidated and reported through a system which consistently yields correct claims.)* The State agency shall determine that the free and reduced price eligibility determinations, effective for the review period, are correct. In addition, the State agency shall determine that for each day of operation for the review period, the number of free, reduced price and paid lunches claimed for each reviewed school is not more than the number of lunches served to children eligible for free, reduced price and paid lunches, respectively, in those schools for the review period. The State agency shall also determine that a lunch counting system is being used which accurately counts, records, consolidates and reports the reimbursable lunches served, by type.

(i) For each school reviewed, the State agency shall:

(A) Determine the number of children eligible for free, reduced price and paid lunches, by type, for the review period. To make this determination, the State agency shall:

(1) Review the free and reduced price applications effective for the review period in the reviewed schools to determine whether each child's application is complete and correctly approved in accordance with all applicable provisions of 7 CFR part 245. In lieu of reviewing all free and reduced price applications effective for the review period in the reviewed schools, the State agency may review a statistically valid sample of those applications. If the State agency chooses to review a statistically valid sample of applications, the State agency shall ensure that the sample size is large enough so that there is a 95 percent chance that the actual error rate for all applications is not less than 2 percentage points less than the error rate found in the sample (i.e., the lower bound of the one-sided 95 percent confidence interval is no more than 2

percentage points less than the point estimate). In addition, the State agency shall determine the need for follow-up reviews and base fiscal action upon the error rate found in the sample.

(2) Evaluate whether the previous year's eligibility determinations are used after 30 operating days following the first day of school, or as otherwise established by the State agency; provided that the State agency-developed timeframe does not exceed the 30 operating day limit.

(3) In the case where child(ren) are determined eligible for free lunches based on documentation from the local food stamp or AFDC agency which certifies that the child(ren) is currently a member of a household receiving benefits under the Food Stamp or AFDC Program, determine that the certification from the Food Stamp Program or AFDC Program is official; all the information required under § 245.6 of this title is complete; and such children were enrolled in the school under review during the review period.

(B) Evaluate the system for issuing benefits and updating eligibility status by validating the mechanism(s) the reviewed school uses to provide benefits to currently eligible children, e.g., master list. The State agency shall determine whether the system is adequate and, within the timeframes established in § 210.7(c)(1)(ii)(B), reflects changes due to verification findings, transfers, reported changes in household size or income, or from a household's decision to decline school lunch benefits or any notification from the household that it is no longer certified to receive food stamp or AFDC benefits.

(C) Determine whether the lunch counting system yields correct claims. At a minimum, the State agency shall determine whether:

(1) The daily lunch counts, by type, for the review period are more than the product of the number of children determined by the school/school food authority to be eligible for free, reduced price, and paid lunches for the review period times an attendance factor. If the lunch count, for any type, appears questionable or significantly exceeds the product of the number of eligibles, for that type, times an attendance factor, documentation showing good cause must be available for review by the State agency.

(2) Each type of food service line provides accurate point of service lunch counts, by type, and those lunch counts are correctly counted and recorded. If an alternative counting system is employed (in accordance with § 210.7(c)(2)), the State agency shall ensure that it provides accurate counts

of reimbursable lunches, by type, and is correctly implemented as approved by the State agency.

(3) All lunches are correctly counted, recorded, consolidated and reported for the day they are served.

(ii) For each school food authority reviewed, the State agency shall review lunch count records to ensure that the lunch counts submitted by each reviewed school are correctly consolidated, recorded, and reported by the school food authority on the Claim for Reimbursement.

(2) *Performance Standard 2 (Lunches claimed for reimbursement within the school food authority contain food items/components as required by Program regulations.)* For each school reviewed, the State agency shall:

(i) For the day of the review, observe the serving line(s) to determine whether all required food items/components are offered.

(ii) For the day of the review, observe a significant number of the Program lunches counted at the point of service for each type of serving line, to determine whether those lunches contain the required number of food items/components.

(iii) Review menu records for the review period to determine whether all required food items/components have been offered.

(h) *General areas of review.* The general areas listed in this paragraph reflect major Program requirements. The general areas of review shall include, but are not limited to, the following areas:

(1) *Free and reduced price process.* In the course of the review of each school food authority, the State agency shall:

(i) Review the implementation of the free and reduced price policy statement to ensure it is implemented as approved.

(ii) Evaluate whether the required minimum number of applications are verified with respect to the selection method used.

(iii) Determine that applications for verification are selected through random or focused sampling in accordance with the provisions of § 245.6a of this title and FNS Instructions, and that no discrimination exists in the selection process.

(iv) Establish that verification is completed by December 15. If the administrative review occurs prior to the December 15 deadline, the State agency shall evaluate the verification activities that have occurred to date and assess whether these activities represent a good faith effort that will result in compliance with the requirements of § 245.6a of this title.

(v) Confirm that the verification process is complete for each application verified by or on behalf of the reviewed schools. Verification is considered complete either when a child's eligibility for the level of benefits for which he or she was approved is confirmed, changed to a higher level of benefit, or a letter of adverse action has been sent.

(vi) Ensure that verification records are maintained as required by § 245.6a(c) of this title.

(vii) Determine that, for each reviewed school, the lunch count system does not overtly identify children eligible for free and reduced price lunches.

(viii) Review a representative sample of denied applications to evaluate whether the determining official correctly denied applicants for free and reduced price lunches.

(2) *Food quantities.* For each school reviewed, the State agency shall observe a significant number of Program lunches counted at the point of service for each type of serving line to determine whether those lunches appear to provide food items/components in the quantities required under § 210.10 of this part. If visual observation suggests that quantities are insufficient, the State agency shall require the reviewed schools to provide documentation demonstrating that the required amounts of food were available for service for each day of the review period.

(3) *Civil rights.* The State agency shall examine the school food authority's compliance with the civil rights provisions specified in § 210.23(b) of this part.

(4) *Monitoring responsibilities.* The State agency shall ensure that the school food authority conducts on-site reviews in accordance with § 210.8(a)(1) of this part and monitors claims in accordance with § 210.8(a)(2) and (a)(3) of this part.

(5) *Reporting and recordkeeping.* The State agency shall determine that the school food authority submits reports and maintains records as required under 7 CFR parts 210 and 245.

(i) *Follow-up reviews.* All school food authorities found to have a critical area violation in excess of any one of the review thresholds specified in this paragraph are subject to follow-up reviews. State agencies shall notify FNS of the names of large school food authorities exceeding critical area review thresholds in accordance with paragraph (d)(2) of this section. The State agency shall conduct a first follow-up review of any large school food authority found on an administrative review to have critical area violations in excess of any one of

the review thresholds. State agencies shall also conduct a first follow-up review of at least 25 percent of the small school food authorities found on a review to have critical area violations in excess of any one of the review thresholds. State agencies shall conduct additional follow-up reviews of any school food authority which has a critical area violation exceeding a review threshold on the first follow-up or any subsequent follow-up review regardless of whether such review is conducted by FNS or the State agency.

(1) *Selection of small school food authorities.* In determining which small school food authorities to include in the follow-up review sample, State agencies shall select those school food authorities which have the most serious problems, including, but not limited to, systemic accountability problems, large overclaims, significant lunch pattern violations, etc.

(2) *Selection of schools.*

(i) If the critical area violation(s) responsible for follow-up review activity are limited to school food authority level problems (e.g. centralized application processing or centralized kitchen), the State agency may limit the follow-up review to the school food authority level.

(ii) If the critical area violation(s) responsible for follow-up review activity were identified in the review of a school(s), then State agencies shall review at least the minimum number of schools required under paragraph (e)(1) of this section. State agencies shall meet the minimum number of schools requirement by selecting those schools found, on a previous review, to have significant critical area violations. If any additional schools must be selected to meet the minimum required number, the State agency shall select from those schools which meet State agency-developed criteria identified under paragraph (e)(2)(ii) of this section.

(3) *Review thresholds.* The review thresholds apply only to the critical areas of review and are designed to limit follow-up reviews to those school food authorities with serious problems. The provisions of paragraph (i) of this section apply when:

(i) For Performance Standard 1—

(A) a number of the reviewed schools in a school food authority, as specified in Table B, have an inadequate system for certification, issuing benefits or updating eligibility status; or for counting, recording, consolidating or reporting lunches, by type; or

(B) the school food authority has an inadequate system for consolidating lunch counts, by type, or for reporting claims; or, if applicable, for certification,

issuing benefits or updating eligibility status.

At the school and school food authority level, a system for certification, issuing benefits or updating eligibility status is inadequate if 10 percent or more (but not less than 10 lunches) of the free and reduced price lunches claimed for the review period (for any school reviewed) are claimed incorrectly due to errors of certification, benefit issuance or updating of eligibility status.

TABLE B

Number of schools reviewed	Number of schools violating performance standard 1
1 to 5.....	1
6 to 10.....	2
11 to 20.....	3
21 to 30.....	4
31 to 40.....	5
41 to 50.....	6
51 to 60.....	7
61 to 70.....	8
71 to 80.....	9
81 to 90.....	10
91 to 100.....	11
101 or more.....	11*

* 11 plus the number identified above for the appropriate increment.

(ii) For Performance Standard 2–10 percent or more of the total number of Program lunches observed in a school food authority are missing one or more of the required food items/components.

(4) *Scope of follow-up reviews.* On any follow-up review, the State agency is encouraged to review all of the critical and general areas of review specified in paragraph (g) and (h) of this section for those schools which were not received during the administrative review. At a minimum, the State agency shall:

(i) For each school selected for review (or for the school food authority, as applicable,) review the critical areas for which the review thresholds were exceeded by the school food authority on a previous review;

(ii) Determine whether the school food authority has satisfactorily completed the corrective actions in accordance with paragraph (k) of this section required for both critical and general areas within the timeframes established by the State agency;

(iii) Evaluate whether these corrective actions resolved the problem(s); and

(iv) If the State agency did not evaluate the certification, count and milk/meal service procedures for the School Breakfast Program (7 CFR part 220) and/or the Special Milk Program for Children (7 CFR part 215) or offering meal supplements in after hour care

programs (7 CFR part 210) in those schools selected for the administrative review and participating in those Programs, the State agency shall do so for those schools selected for the first follow-up review.

(5) *Critical area violations identified in a follow-up review.* Critical area violations identified on a follow-up review shall be addressed as follows:

(i) If, during a follow-up review, the State agency determines, that corrective actions have not been satisfactorily completed in accordance with the documented corrective action, the State agency shall: require the school food authority to resolve the problems and to submit documented corrective action to the State agency; take fiscal action for critical area violations as specified in paragraph (m) of this section; and withhold Program payments in accordance with paragraph (1) of this section, until such time as a follow-up review, requested by the school food authority, indicates the problem has been corrected. If the State agency determines that the corrective actions have been completed as specified in the documented corrective action, but those corrective actions do not effectively resolve the problem, the State agency shall follow the requirements for new critical area violations specified in paragraphs (i)(5)(ii) and (iii) of this section.

(ii) If new critical area violations are observed that exceed as review threshold, the State agency shall: Require the school food authority to resolve the problems and to submit documented corrective action to the State agency; take fiscal action as specified in paragraph (m) of this section; and conduct a follow-up review within 6 operating months of the first follow-up review.

(iii) If new critical area violations are observed which do not exceed review thresholds, the State agency shall: Require the school food authority to resolve the problem and to submit documented corrective action to the State agency within specified timeframes; and take fiscal action in accordance with paragraph (m) of this section. If adequate documented corrective action is not received within those timeframes, the State agency shall withhold Program payments in accordance with paragraph (1) of this section, until such time as adequate documented corrective action is received.

(6) *General area violations identified in a follow-up review.* General area violations identified in a follow-up review shall be addressed as follows:

(i) If, during a follow-up review, the State agency determines that corrective actions have not been taken in accordance with the documented corrective action, the State agency shall withhold Program payments in accordance with paragraph (1) of this section, until such time as the State agency receives adequate documented corrective action.

(ii) If the State agency determines that the corrective actions taken did not effectively resolve the problem, or if new general area violations are observed on a follow-up review, the State agency shall require the school food authority to resolve the problem and to submit documented corrective action to the State agency within specified timeframes. If adequate documented corrective action is not received within those timeframes, the State agency shall withhold Program payments in accordance with paragraph (l) of this section, until such time as adequate documented corrective action is received.

(7) *Exceptions.* FNS may, on an individual school food authority basis, approve written requests for exceptions to the follow-up review requirement specified in paragraph (i)(1) of this section if FNS determines that the requirement conflicts with efficient State agency management of the program.

(j) *Exit conference and notification.* The State agency shall hold an exit conference at the close of the administrative review and of any subsequent follow-up review to discuss the violations observed, the extent of the violations and a preliminary assessment of the actions needed to correct the violations. The State agency shall discuss an appropriate deadline(s) for completion of corrective action, provided that the deadline(s) results in the completion of corrective action on a timely basis. After every review, the State agency shall provide written notification of the review findings to the school food authority's Superintendent (or equivalent in a non-public school food authority) or authorized representative. The written notification shall include the review findings, the needed corrective actions, the deadlines for completion of the corrective action, and the potential fiscal action.

(k) *Corrective action.* Corrective action is required for any violation under either the critical or general areas of the review. Corrective action shall be applied to all schools in the school food authority, as appropriate, to ensure that previously deficient practices and procedures are revised system-wide.

Corrective actions may include training, technical assistance,

recalculation of data to ensure the correctness of any claim that the school food authority is preparing at the time of the review, or other actions. Fiscal action shall be taken in accordance with paragraph (m) of this section.

(1) *Extensions of the timeframes.* If extraordinary circumstances arise where a school food authority is unable to complete the required corrective action within the timeframes specified by the State agency, the State agency may extend the timeframes upon written request of the school food authority.

(2) *Documented corrective action.* Documented corrective action is required for any degree of violation of general or critical areas identified in an administrative review or on any follow-up review. Documented corrective action may be provided at the time of the review; however, it shall be postmarked or submitted to the State agency no later than 30 days from the deadline for completion of each required corrective action, as specified under paragraph (j) of this section or as otherwise extended by the State agency under paragraph (k)(1) of this section. The State agency shall maintain any documented corrective action on file for review by FNS.

(l) *Withholding payment.* At a minimum, the State agency shall withhold all Program payments to a school food authority as follows:

(1) *Cause.* The State agency shall withhold all Program payments to a school food authority:

(i) If the State agency finds that corrective action is not completed and/or documented corrective action is not provided within the deadlines specified in paragraphs (j) and (k)(2) of this section, or as otherwise extended by the State agency under paragraph (k)(1) of this section; or

(ii) If, on a follow-up review, the State agency finds that corrective actions have not been taken as specified in the documented corrective action.

(2) *Duration.* In all cases, Program payments shall be withheld until such time as corrective action is completed, and documented corrective action is received and deemed acceptable by the State agency or as otherwise specified in paragraph (i)(5) of this section. Subsequent to the State agency's acceptance of the corrective actions (and a follow-up review, when required), payments will be released for all lunches served in accordance with the provisions of this part during the period the payments were withheld. In very serious cases, the State agency will evaluate whether the degree of non-compliance warrants termination in accordance with § 210.25 of this part.

(3) *Exceptions.* Under extraordinary circumstances, FNS may authorize a State agency to limit withholding of funds to an amount less than the total Program payments.

(4) *Failure to withhold payments.* FNS may suspend or withhold Program payments, in whole or in part, to those State agencies failing to withhold Program payments in accordance with paragraph (l)(1) of this section and may withhold administrative funds in accordance with § 235.11(b) of this title. The withholding of Program payments will remain in effect until such time as the State agency documents compliance with paragraph (i)(1) of this section to FNS. Subsequent to the documentation of compliance, any withheld administrative funds will be released and payment will be released for any lunches served in accordance with the provisions of this part during the period the payments were withheld.

(m) *Fiscal action.* For purposes of the critical areas of the administrative review and any follow-up reviews, fiscal action is required for all violations of Performance Standards 1 and 2. Fiscal action shall be taken in accordance with the provisions identified under § 210.19(c) of this part.

(n) *Miscellaneous reporting requirement.* Each State agency shall report to FNS the results of reviews by March 1 of each school year, on a form designated by FNS. In such annual reports, the State agency shall include the results of all administrative reviews and follow-up reviews conducted in the preceding school year.

(o) *Summary of reporting requirements.* Each State agency shall report to FNS:

(1) The names of those large school food authorities exceeding any one of the critical area review thresholds as described in paragraph (d)(2) of this section.

(2) The results of reviews by March 1 of each school year on a form designated by FNS, as specified under paragraph (n) of this section.

(p) *Recordkeeping.* Each State agency shall keep records which document the details of all reviews and demonstrate the degree of compliance with the critical and general areas of review. Records shall be retained by the State agency as specified in § 210.23(c) of this part. Such records shall include documentation of administrative reviews and follow-up reviews. As appropriate, the records shall include documented corrective action, and documentation of withholding of payments and fiscal action, including

recoveries made. Additionally, the State agency must have on file:

(1) Criteria for selecting schools on first and follow-up reviews in accordance with paragraphs (e)(2)(ii) and (i)(2)(ii) of this section.

(2) Its system for selecting small school food authorities for follow-up reviews in accordance with (i)(1) of this section.

(3) Documentation demonstrating compliance with the statistical sampling requirements in accordance with paragraph (g)(1)(i)(A)(1) of this section, if applicable.

(q) *FNS review activity.* The term "State agency" and all the provisions specified in paragraphs (a)-(h) of this section refer to FNS when FNS conducts administrative reviews or follow-up reviews in accordance with § 210.30(d)(2) of this part. FNS will notify the State agency of the review findings and the need for corrective action and fiscal action. The State agency shall pursue any needed follow-up activity.

10. In newly redesignated § 210.18a:

- Section title is revised;
- Paragraphs (a)-(e) are removed and new paragraph (a) is added;
- Paragraphs (f) through (n) are redesignated as paragraphs (b) through (j), respectively;
- In newly redesigned paragraph (b), the words "paragraph (n)" are removed and the words "paragraph (j)" are added in their place;
- Newly redesigned paragraphs (c)(1) through (c)(7) are redesignated as paragraphs (c)(2) through (c)(8) and new paragraph (c)(1) is added;
- In newly redesigned paragraphs (c)(7) and (e)(3)(i), the words "paragraph (i)(4)" are removed and the words "paragraph (e)(4)" are added in their place;
- In newly redesigned paragraphs (e) introductory text and (f) introductory text, the words "paragraph (g)" are removed and the words "paragraph (c)" are added in their place;
- In newly redesigned paragraphs (e)(4) (ii) and (iii), the words "paragraph (i)(5)" are removed and the words "paragraph (e)(5)" are added in their place;

- i. In newly redesigned paragraph (f), the words "paragraph (i)(1)" are removed and the words "paragraph (e)(1)" are added in their place;
- j. In newly redesigned paragraph (g), the words "paragraph (i)(6)" are removed and the words "paragraph (e)(6)" are added in their place; and
- k. In newly redesigned paragraph (i)(3), the citation "\$ 210.18(i)" is removed and the words "paragraph (e) of this section" are added in its place.

The revision and additions read as follows:

§ 210.18a. Assessment, Improvement and monitoring system.

(a) *Effective date.* The provisions of this section are effective through June 30, 1992.

* * * *

(c) * * *

(1) AIMS means the Assessment, Improvement and Monitoring System. This is a management improvement system used in the National School Lunch and Commodity School Programs.

* * * *

11. In § 210.19:

- Paragraph (a) is revised;
- The introductory text of paragraph (c) and paragraph (c)(1) are revised, (c)(2) through (c)(6) are redesignated as paragraphs (c)(3) through (c)(7), respectively, and a new paragraph (c)(2) is added; and
- Newly redesigned paragraph (c)(6) and paragraph (d) are revised.

The revisions and addition read as follows:

§ 210.19 Additional responsibilities.

(a) *General Program management.* Each State agency shall provide an adequate number of consultative, technical and managerial personnel to administer programs and monitor performance in complying with all Program requirements.

(1) *Financial management system.* Each State agency shall establish a financial management system under which school food authorities shall account for all revenues and expenditures of their nonprofit school food service. The system shall prescribe the allowability of nonprofit school food service expenditures in accordance with this part and, as applicable, 7 CFR part 3015. The system shall permit determination of the nonprofit school food service net cash resources, and shall include any criteria for approval of net cash resources in excess of 3 months' average expenditures. Each State agency shall monitor through review or audit or by other means, the net cash resources of the nonprofit school food service in each school food authority participating in the Program. In the event that net cash resources exceed 3 months' average expenditures for the school food authority's nonprofit school food service or such other amount as may be approved in accordance with this paragraph, the State agency may require the school food authority to reduce the price children are charged for lunches, improve food quality or take other action designed to improve the nonprofit school food service. In the

absence of any such action, the State agency shall make adjustments in the rate of reimbursement under the Program.

(2) *Improved management practices.*

The State agency shall work with the school food authority toward improving the school food authority's management practices where the State agency has found poor food service management practices leading to decreasing or low child participation and/or poor child acceptance of the Program or of foods served. Poor child acceptance may be indicated by a substantial number of children who routinely and over a period of time do not favorably accept a particular menu item; return foods; or choose less than all five food items as authorized under § 210.10(e) of this part.

(3) *Program compliance.* Each State agency shall require that school food authorities comply with the applicable provisions of this part. The State agency shall ensure compliance through audits, administrative reviews, technical assistance, training guidance materials or by other means.

(4) *Investigations.* Each State agency shall promptly investigate complaints received or irregularities noted in connection with the operation of the Program, and shall take appropriate action to correct any irregularities. State agencies shall maintain on file, evidence of such investigations and actions. FNS and OIG may make reviews or investigations at the request of the State agency or where FNS or OIG determines reviews or investigations are appropriate.

(5) *Food service management companies.* Each State agency shall annually review each contract between any school food authority and food service management company to ensure compliance with all the provisions and standards set forth in § 210.16 of this part. Each State agency shall perform an on-site review of each school food authority contracting with a food service management company, at least once during each 4 year period. The State agency is encouraged to conduct such a review when performing reviews in accordance with § 210.18 or § 210.18a of the part. Such reviews shall include an assessment of the school food authority's compliance with § 210.16 of this part. The State agency may require that all food service management companies that wish to contract for food service with any school food authority in the State register with the State agency. State agencies shall provide assistance upon request of a school food

authority to assure compliance with Program requirements.

(c) *Fiscal action.* State agencies are responsible for ensuring Program integrity at the school food authority level. State agencies shall take fiscal action against school food authorities for Claims for Reimbursement that are not properly payable under this part. In taking fiscal action, State agencies shall use their own procedures within the constraints of this part and shall maintain all records pertaining to action taken under this section. The State agency may refer to FNS for assistance in making a claims determination under this part.

(1) *Definition.* Fiscal action includes, but is not limited to, the recovery of overpayment through direct assessment or offset of future claims, disallowance of overclaims as reflected in unpaid Claims for Reimbursement, submission of a revised Claim for Reimbursement, and correction of records to ensure that unfiled Claims for Reimbursement are corrected when filed.

(2) *General principles.* When taking fiscal action, State agencies shall consider the following:

(i) The State agency shall identify the school food authority's correct entitlement and take fiscal action when any school food authority claims or receives more Federal funds than earned under § 210.7 of this part. In order to take fiscal action, the State agency shall identify accurate counts of reimbursable lunches through available data, if possible. In the absence of reliable data, the State agency shall reconstruct the lunch accounts in accordance with procedures established by FNS. Such procedures will be based on the best available information including, participation factors for the review period, data from similar schools in the school food authority, etc.

(ii) Fiscal action shall be extended back to the beginning of the school year or that point in time during the current school year when the infraction first occurred, as applicable. Based on the severity and longevity of the problem, the State agency may extend fiscal action back to previous school years, as applicable. The State agency shall ensure that any Claim for Reimbursement, filed subsequent to the reviews conducted under § 210.18 or § 210.18a of this part and prior to the implementation of corrective action, is limited to lunches eligible for reimbursement under this part.

(iii) In taking fiscal action, State agencies shall assume that children determined by the reviewer to be

incorrectly approved for free and reduced price lunches participated at the same rate as correctly approved children in the corresponding lunch category.

(6) *Exceptions.* The State agency need not disallow payment or collect an overpayment arising out of the situations described in paragraphs (c)(6)(i) and (ii) of this section; provided that the school food authority corrects the problem(s) to the satisfaction of the State agency:

(i) when any review or audit reveals that a school food authority is failing to meet the quantities for each food item required under the meal pattern in § 210.10; or

(ii) when any review or audit reveals that a school food authority is approving applications which indicate that the households' incomes are within the Income Eligibility Guidelines issued by the Department or the applications contain a food stamp or AFDC case number but the applications are missing the documentation specified under 7 CFR 245.2 (a-4) (3) and/or (4).

(d) *Management evaluations.* Each State agency shall provide FNS with full opportunity to conduct management evaluations of all State agency Program operations and shall provide OIG with full opportunity to conduct audits of all State agency Program operations. Each State agency shall make available its records, including records of the receipt and disbursement of funds under the Program and records of any claim compromised in accordance with this paragraph, upon a reasonable request by FNS, OIG, or the Comptroller General of the United States. FNS and OIG also has the right to make audits of the records and operations of any school. In conducting management evaluations, reviews or audits for any fiscal year, the State agency, FNS, or OIG may disregard any overpayment if the total overpayment does not exceed \$250 or, in the case of State agency claims in State administered Programs, it does not exceed the amount established under State law, regulations or procedure as a minimum amount for which claim will be made for State losses but not to exceed \$250. However, no overpayment is to be disregarded where there is substantial evidence of violations of criminal law or civil fraud statutes.

12. In § 210.20:

a. Paragraphs (a)(5) and (a)(6) are revised;

b. Paragraph (a)(7) is amended by removing the citation "§ 210.27(d)" and adding the citation "§ 210.28(d)" in its place;

c. Paragraph (b)(4) is amended by removing the citation "§ 210.18(b)" and adding the citation "§ 210.19(a)" in its place;

d. Paragraph (b)(5) is amended by removing the citation "§ 210.18(e)" and adding the citation "§ 210.19(a); in its place;

e. Paragraphs (b)(6) and (b)(7) are revised; and

f. Paragraph (b)(i) is amended by removing the words "AIMS reviews, AIMS audits," and adding in their place the words "reviews, audits"; and

g. Paragraph (b)(11) is amended by removing the citation "§ 210.27(d)" and adding the citation "§ 210.28(d)" in its place.

The revisions read as follows:

§ 210.20 Reporting and recordkeeping.

(a) * * *

(5) The names of school food authorities in need of a follow-up review;

(6) Results of reviews and audits; and

(b) * * *

(6) Records of all reviews and audits, including records of action taken to correct Program violations; and records of fiscal action taken, including documentation of recoveries made;

(7) State agency criteria for selecting schools for reviews and small school food authorities for follow-up reviews;

13. §§ 210.24, 210.25, 210.26, 210.27, 210.28, 210.29, and 210.30 are redesignated as §§ 210.25, 210.26, 210.27, 210.28, 210.29, 210.31 and 210.32, respectively. New §§ 210.24 and 210.30, are added to read as follows:

§ 210.24 Withholding payments.

In accordance with § 3015.103 of this title, the State agency shall withhold Program payments, in whole or in part, to any school food authority which has failed to comply with the provisions of this part. Program payments shall be withheld until the school food authority takes corrective action satisfactory to the State agency, or gives evidence that such corrective action will be taken, or until the State agency terminates the grant in accordance with § 210.25 of this part. Subsequent to the State agency's acceptance of the corrective actions, payments will be released for any lunches served in accordance with the provisions of this part during the period the payments were withheld.

§ 210.30 Management evaluations.

(a) *Management evaluations.* FNS will conduct a comprehensive management evaluation of each State agency's administration of the National School Lunch Program.

(b) *Basis for evaluations.* FNS will evaluate all aspects of State agency management of the Program using tools such as State agency reviews as required under § 210.18 or § 210.18a of this part; reviews conducted by FNS in accordance with § 210.18 of this part; FNS reviews of school food authorities and schools authorized under § 210.19(a)(4) of this part; follow-up reviews and actions taken by the State agency to correct violations found during reviews; FNS observations of State agency reviews; and audit reports.

(c) *Scope of management evaluations.* The management evaluation will determine whether the State agency has taken steps to ensure school food authority compliance with Program regulations, and whether the State agency is administering the Program in accordance with Program requirements and good management practices.

(1) *Local compliance.* FNS will evaluate whether the State agency has actively taken steps to ensure that school food authorities comply with the provisions of this part.

(2) *State agency compliance.* FNS will evaluate whether the State agency has fulfilled its State level responsibilities, including, but not limited to the following areas: use of Federal funds; reporting and recordkeeping; agreements with school food authorities; review of food service management company contracts; review of the claims payment process; implementation of the State agency's monitoring responsibilities; initiation and completion of corrective action; recovery of overpayments; disallowance of claims that are not properly payable; withholding of Program payments; oversight of school food authority procurement activities; training and guidance activities; civil rights; and compliance with the State Administrative Expense Funds requirements as specified in 7 CFR part 235.

(d) *School food authority reviews.* FNS will examine State agency administration of the Program by reviewing local Program operations. When conducting these reviews under paragraph (d)(2) of this section, FNS will follow all the administrative review requirements specified in § 210.18(a)–(h) of this part. When FNS conducts reviews, the findings will be sent to the State agency to ensure all the needed

follow-up activity occurs. The State agency will, in all cases, be invited to accompany FNS reviewers.

(1) *Observation of State agency reviews.* FNS may observe the State agency conduct of any review and/or any follow-up review as required under this part. At State agency request, FNS may assist in the conduct of the review.

(2) *Section 210.18 reviews.* FNS will conduct administrative reviews or follow-up reviews in accordance with § 210.18(a)–(h) of this part which will count toward meeting the State agency responsibilities identified under § 210.18 of this part.

(3) *Coordination with State agency.* FNS will coordinate school food authority selection with the State agency to ensure that no unintended overlap exists and to ensure reviews are conducted in a consistent manner.

(e) *Management evaluation findings.* FNS will consider the results of all its review activity within each State, including school food authority reviews, in performing management evaluations and issuing management evaluation reports. FNS will communicate the findings of the management evaluation to appropriate State agency personnel in an exit conference. Subsequent to the exit conference, the State agency will be notified in writing of the management evaluation findings and any needed corrective actions or fiscal sanctions in accordance with the provisions § 210.25 of this part and/or 7 CFR part 235.

PART 215—SPECIAL MILK PROGRAM FOR CHILDREN

1. The authority citation is revised to read as follows:

Authority: Secs. 3, 10, Child Nutrition Act of 1966, 80 Stat. 885, 889, as amended (42 U.S.C. 1772, 1779).

2. In § 215.11, two new sentences are added at the end of paragraph (b)(2) to read as follows:

§ 215.11 Special responsibilities of State agencies.

(b) * * *

(2) * * * State agencies shall conduct reviews of schools participating in the Program for compliance with the provisions of this part when such schools are being reviewed under the provisions identified under § 210.18(i) of this title. Compliance reviews of participating schools shall focus on the reviewed school's compliance with the required certification, counting and milk service procedures.

PART 220—SCHOOL BREAKFAST PROGRAM

1. The authority citation continues to read as follows:

Authority: Secs. 4 and 10 of the Child Nutrition Act of 1966, 80 Stat. 886, 889 (42 U.S.C. 1773, 1779), unless otherwise noted.

2. In § 220.13, paragraph (f)(2), previously reserved, is added to read as follows:

§ 220.13 Special responsibilities of State agencies.

* * * * *

(f) * * * (2) State agencies shall conduct reviews of schools participating in the Program for compliance with the provisions of this part when such schools are being reviewed under the provisions identified under § 210.18(i) of this title. Compliance reviews of participating schools shall focus on the reviewed school's compliance with the required certification, counting and breakfast service procedures.

PART 235—STATE ADMINISTRATIVE EXPENSE FUNDS

1. The authority citation is revised to read as follows:

Authority: Secs. 7 and 10 of the Child Nutrition Act of 1966, 80 Stat. 888, 889, as amended (42 U.S.C. 1776, 1779).

§ 235.4 [Amended]

2. In § 235.4:

a. Paragraph (b)(3)(i) is amended by removing the words "Assessment, Improvement and Monitoring System (AIMS)" and adding the words "reviews conducted under § 210.18 or § 210.18a of this title" in their place; and

b. Paragraphs (b)(3)(ii), (iii), and (iv) are amended by removing the acronym "AIMS" wherever it appears and adding the words "reviews conducted under § 210.18 or § 210.18a of this title" in its place.

§ 235.6 [Amended]

3. In § 235.6, paragraph (a–2) is amended by removing the acronym "AIMS" and adding the words "reviews conducted under § 210.18 or § 210.18a of this title" in its place, and removing the words "in § 210.2" from the end of the sentence.

4. In § 235.11, paragraphs (b)(2)(i), (ii), (iii), (iv), and (v) are revised to read as follows:

§ 235.11 Other provisions.

* * * * *

(b) * * *

(2) * * *

- (i) Implementing the requirements in § 210.18 or § 210.18a of this title;
 - (ii) Conducting the number of reviews required in § 210.18 or § 210.18a of this title within the timeframes specified;
 - (iii) Covering the areas of review set forth in the § 210.18 or § 210.18a, carrying out corrective action, and assessing and recovering claims as prescribed in § 210.18, § 210.18a, and § 210.19 of this title;
 - (iv) Conducting reviews with sufficient thoroughness to identify violations of the areas of review identified in § 210.18 or § 210.18a of this title; and
 - (v) Meeting the reporting deadlines prescribed for the forms (FNS-10 and SF-269) required under § 210.5(d) of this title.
- * * * * *

PART 245—DETERMINING ELIGIBILITY FOR FREE AND REDUCED PRICE MEALS AND FREE MILK IN SCHOOLS

1. The authority citation is revised to read as follows:

Authority: Secs. 3, 4, and 10 of the Child Nutrition Act of 1966, 80 Stat. 885, 886, 889, as amended (42 U.S.C. 1772, 1773, 1779); secs. 2-

12, 60 Stat. 230, as amended (42 U.S.C. 1751-60).

2. In § 245.6, paragraph (b), introductory text, is amended by removing the first sentence of the paragraph and adding two new sentences in its place to read as follows:

§ 245.6 Application for free and reduced price meals and free milk.

* * * * *

(b) *Determination of eligibility.* Prior to the processing of applications for the current school year, children from households with approved applications on file from the preceding year may be served reimbursable free and reduced price meals or free milk. However, applications from the preceding year may be used to determine eligibility only during the 30 operating days following the first operating day at the beginning of the school year, or during a timeframe established by the State agency, provided that any State agency timeframe does not exceed the 30 operating day limit. * * *

3. In § 245.6a, paragraph (c) is amended by removing the word "and" after (c)(2), by removing the period after

(c)(3) and adding a semicolon in its place, and by adding new paragraphs (c)(4), (c)(5), and (c)(6) to read as follows:

§ 245.6a Verification requirements.

* * * * *

(c) * * *

(4) all verified applications must be readily retrievable by school and include all documents submitted by the household in an effort to confirm eligibility, reproductions of those documents, or annotations made by the determining official which indicate which documents were submitted by the household and the date of submission;

(5) documentation of any changes in eligibility and the reasons for the changes; and

(6) all relevant correspondences between the household selected for verification and the school food authority/school.

* * * * *

Dated: July 12, 1991.

George A. Braley,
Acting Administrator, Food and Nutrition Service.

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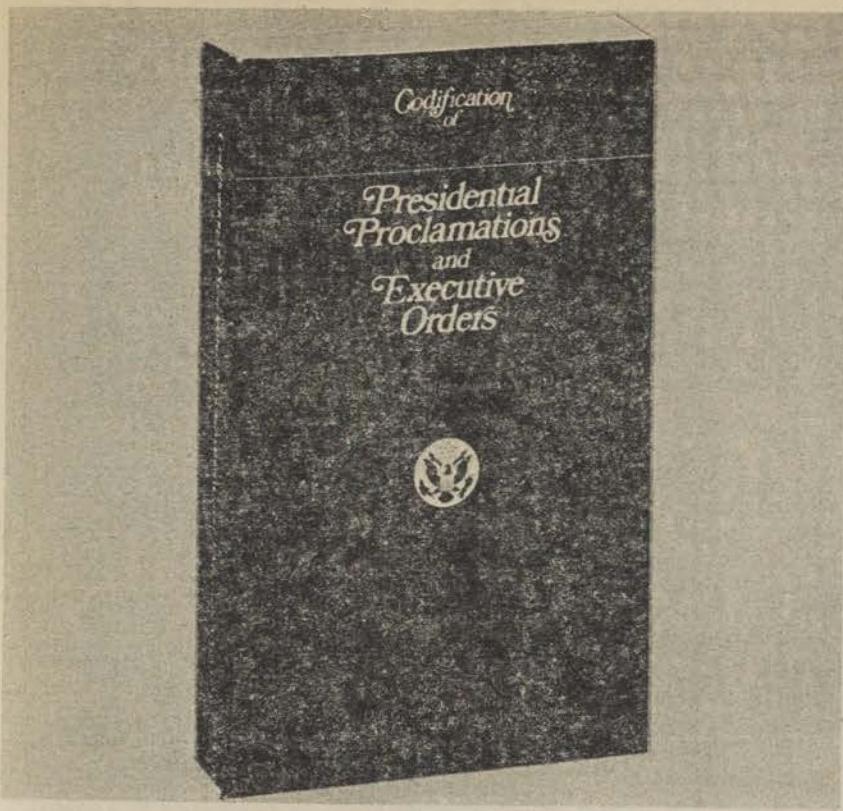
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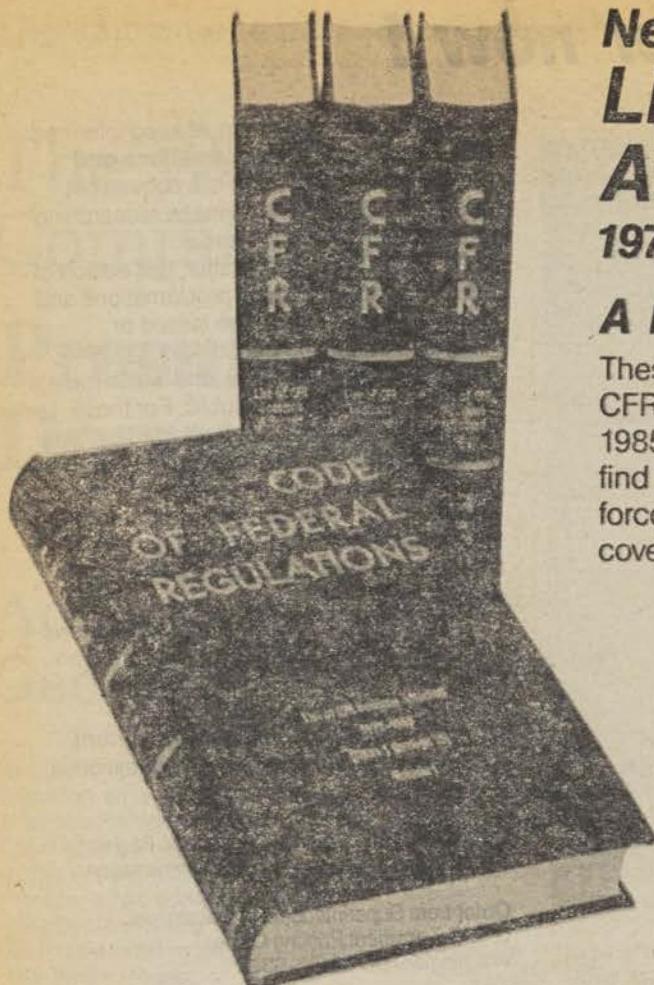
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